
PHASE I SURVEY OF 3,500 ACRES AT
FORT LEONARD WOOD

PULASKI Co.

MISSOURI



by Paul P. Kreisa, Jacqueline M. McDowell, Kevin P. McGowan,
Gregory R. Walz, Brian Adams, and David J. Halpin

PUBLIC SERVICE ARCHAEOLOGY PROGRAM

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PULASKI COUNTY, MISSOURI**

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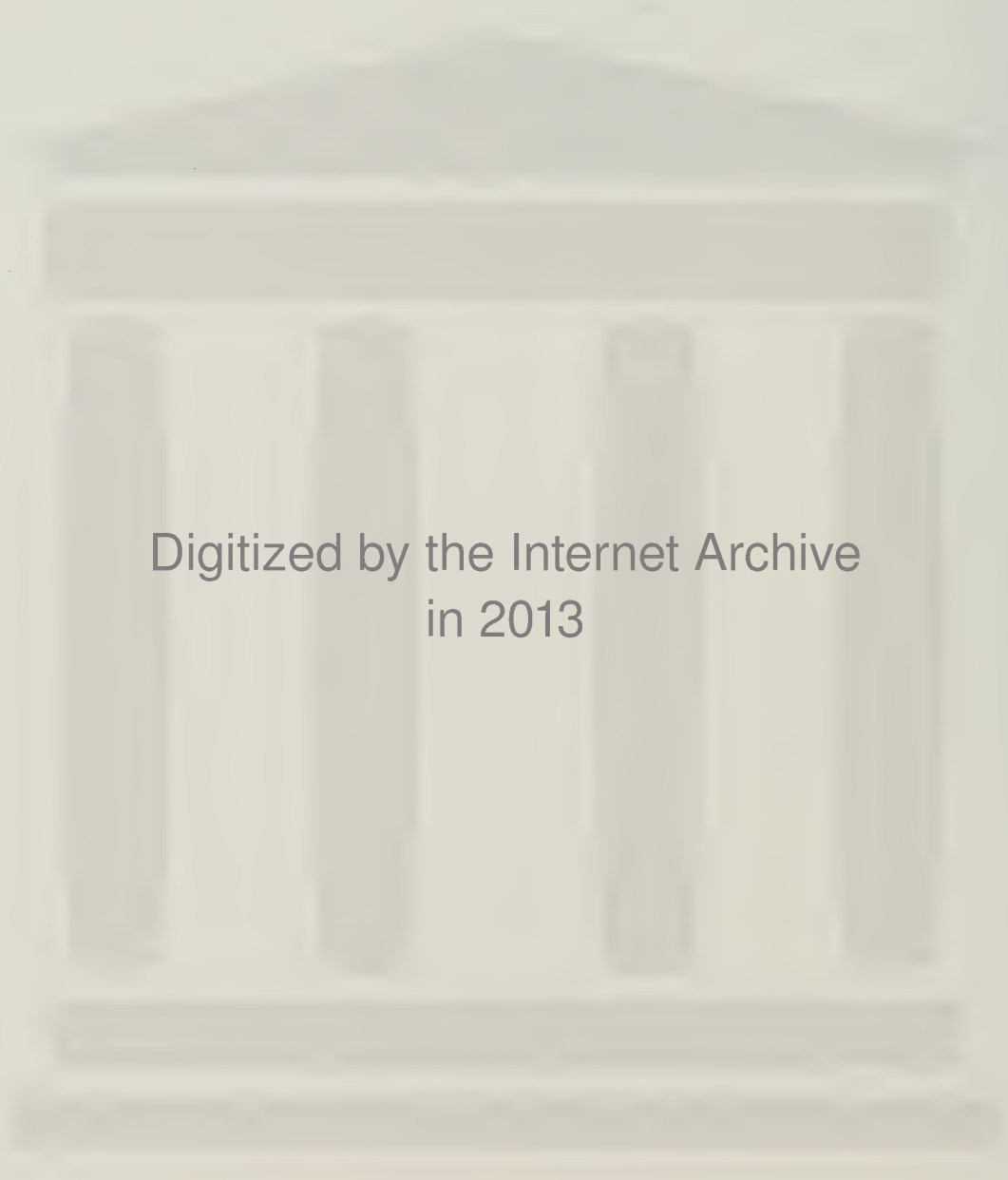
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ABSTRACT

From November 1995 through March 1996, the Public Service Archaeology Program of the University of Illinois at Urbana-Champaign conducted a Phase I survey of 3,500 acres on the Fort Leonard Wood Military Reservation, Missouri, for the United States Army Construction Engineering Research Laboratories. The investigations were designed to provide archaeological inventory and management recommendations for unsurveyed tracts and test the validity of a model predicting prehistoric site locations. The survey documented 39 previously unreported archaeological sites, 27 previously reported sites, and 10 prehistoric isolated finds. Twenty-six sites are recommended for Phase II evaluation. Specific evaluation tasks are discussed for each site. The results of the survey suggest that the recently developed GIS prehistoric site locational model is relatively robust for cairn and cave/rockshelter sites, but deviations from the expected occur in some areas for prehistoric open-air sites.



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I thank all of these individuals for their help with this project. They should be pleased that their efforts have aided in furthering the scientific, cultural and historical understanding of the study region. I hope that the content and contributions of this report have made their efforts worthwhile.

P.P.K.

September 1996

CHAPTER 1. INTRODUCTION

In May 1995 the United States Army Construction Engineering Research Laboratories (USACERL) contracted with the University of Illinois at Urbana-Champaign to conduct a Phase I survey of up to 3,500 acres (1,1416.5 ha) at Fort Leonard Wood Military Reservation in Pulaski County, Missouri (Figure 1). The project was conducted by personnel from the University of Illinois Public Service Archaeology Program, with fieldwork taking place between November 1995 and March 1996. This report details the results of the investigations, provides recommendations for further archaeological work at specific sites, and offers both refinements and alternatives to current prehistoric settlement and site location models.

Federal cultural-resource laws, including the National Historical Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR 800 (Sections 106 and 110), as well as Army Regulation 200-4 (draft) and 420-4, require the identification and assessment of archaeological sites on federal property. The purpose of this archaeological site inventory survey is to fulfill these mandates in part by locating archaeological sites and evaluating their potential eligibility for inclusion in the National Register of Historic Places (NRHP). Survey tracts inventoried for cultural resources during this project are, in part, proposed for use as training/bivouac activities and timber sales.

In all, 3,500 acres were surveyed during this project. The areas surveyed are located in three separate tracts (Figure 2). The Northern USFS Joint Use Land Tract, comprising 1,968 acres (796.4 ha) of uplands and floodplain, is located on the northwest side of Fort Leonard Wood and jointly managed with the Mark Twain National Forest. The McCann Cemetery Tract, on the west-central portion of the base, consists of 650 acres (263.1 ha) of floodplain, terraces and uplands. The Quarry Timber Sale Tract is comprised of four separate parcels on the eastern portion of the base totaling 882 acres (356.9 ha) of floodplain, terraces and bluffs.

The archaeological investigations used reconnaissance techniques typically employed in the Midwest. In all survey areas, surface visibility was less than 30 percent, necessitating the excavation of posthole tests at 20-m intervals, with all sediments screened through 6.35-mm mesh hardware cloth. Soil profiles were documented for posthole tests that contained cultural material. Steeply sloped areas (greater than 20 percent) were visually inspected for sites such as mounds, cairns and caves/rockshelters, but systematic subsurface testing was not conducted. When located, such sites were further documented.

In accordance with the Statement of Work, locations with less than three artifacts within a 20-m diameter area were considered isolated finds. Archaeological Survey of Missouri (ASM) site forms were completed for areas of scatter with three or more artifacts. Isolated finds are identified by their field number. All sites and isolated finds were located on standard USGS 7.5' series topographic maps, and were documented by site-specific sketch maps, photographs, the collection of artifacts, and notes detailing fieldwork conducted, topography, environment, disturbances, and other aspects of site condition.

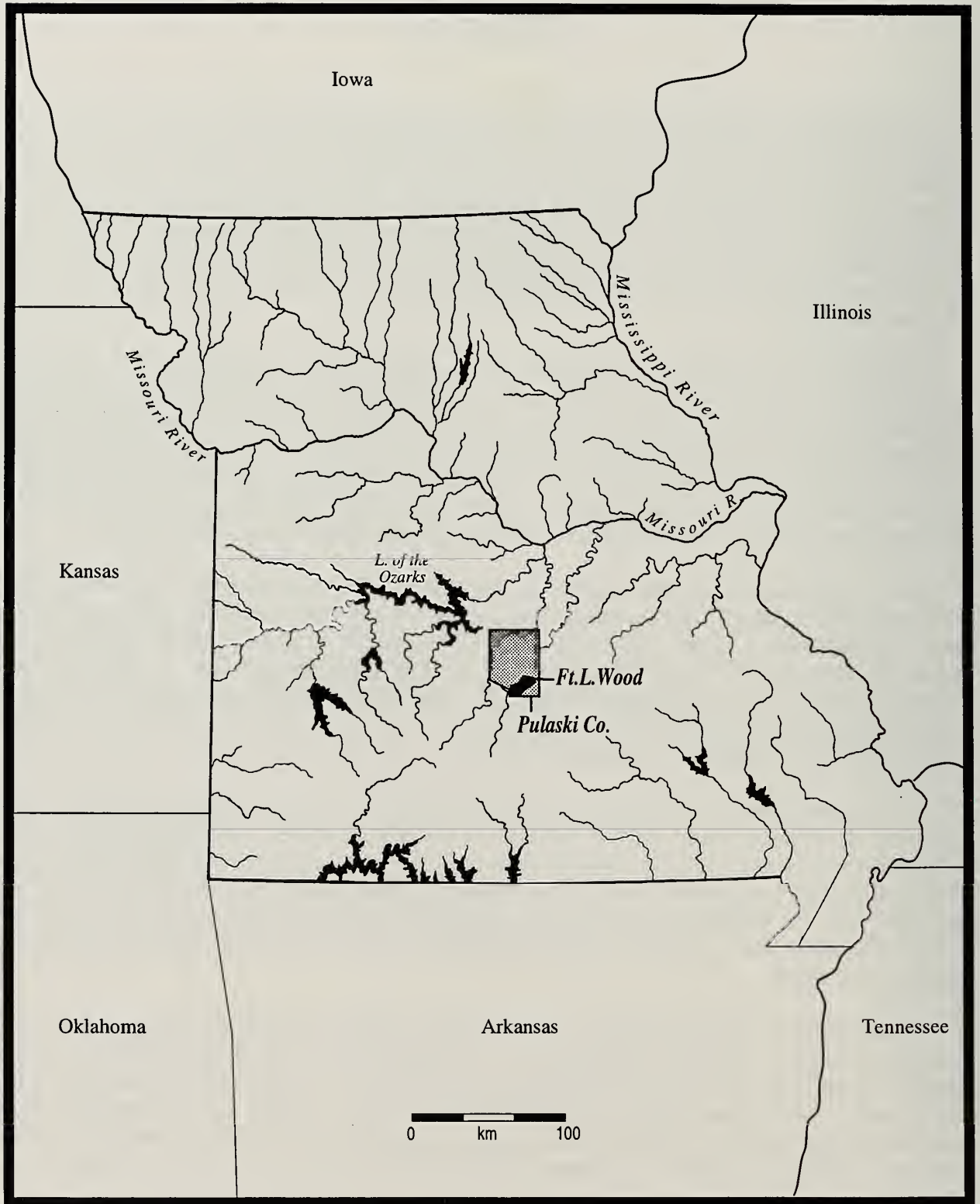


Figure 1. Location of Fort Leonard Wood, Missouri.

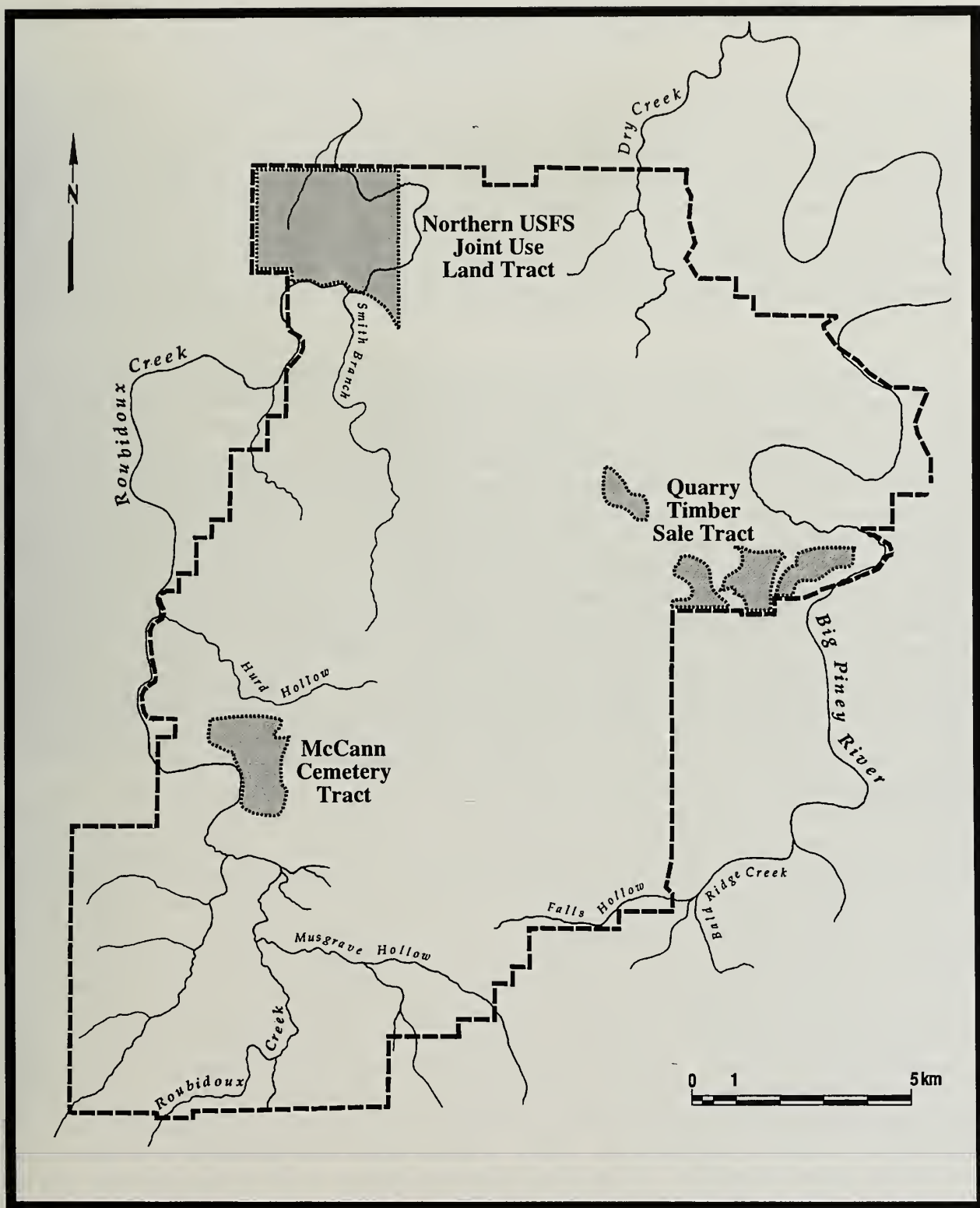


Figure 2. Location of Survey Tracts Investigated at Fort Leonard Wood.

As a result of this project, 49 previously unrecorded sites and isolated finds were located. An additional 27 sites had been recorded prior to this project. Updated information is provided for these sites. The remaining 49 locations include 39 sites and 10 isolated finds. The newly identified sites include 32 prehistoric, 4 historic, and 3 prehistoric/historic sites. An inventory of material by provenience from each site and isolated find is presented in Appendix A. As specified in the Statement of Work, United States Geological Survey (USGS) quadrangles maps indicating the location of the sites and isolated finds are included in a separate appendix (Appendix B) because of the sensitive nature of site location information. Archaeological Survey of Missouri site forms have been completed for all sites (Appendix C). All artifacts and documentation associated with this project have been submitted to USACERL.

The remainder of this report provides environmental and cultural overviews of the Fort Leonard Wood area, details the research goals and field and laboratory methods used during this project, and describes and interprets the results of the Phase I site inventory of 3,500 acres. Chapter 2 is a brief description of the regional environmental setting. Chapter 3 provides a summary of the regional prehistoric chronology and an overview of previous work performed on and near Fort Leonard Wood. Chapter 4 provides the underlying research orientation and details specific research questions that are addressed in Chapter 7. Chapter 5 outlines the field and laboratory methods and procedures. Chapter 6 presents the results of the investigations, including site descriptions, descriptions of the investigations conducted and their results, description and analyses of the artifact assemblages, interpretation of the results, and recommendations for further work. Chapter 7 addresses the results of the project in terms of the research questions outlined in Chapter 4. Chapter 8 summarizes the results of the project and provides a summary of NRHP recommendations for each site. References Cited are followed by appendices, which include an artifact inventory (Appendix A), site location maps (Appendix B), ASM site forms (Appendix C), copies of all field notes, maps and laboratory analyses (Appendix D), and photographs (Appendix E). Appendices B through E are bound separately as requested in the Statement of Work.

CHAPTER 2.

ENVIRONMENTAL SETTING

Fort Leonard Wood, Pulaski County, Missouri, is located within the Salem Plateau Section of the Ozark Plateau region (Figure 3). The rolling landscape is characterized by upland ridge plateaus that are separated by deeply entrenched stream valleys (Figure 4). Caves, rockshelters, solution cavities, and sinkholes are numerous and add to the character of the region. All such features were significant factors in the prehistoric settlement of the Fort Leonard Wood area. At present, much of the area is covered by oak-hickory forest with scattered junipers. This section presents a detailed overview of the environment of the Fort Leonard Wood area, including geology and physiography, soils, climate, and floral and faunal communities.

Geology and Physiography

Fort Leonard Wood is located in the Salem Plateau Section of the Ozark Plateau region (Whitefield 1989) of the Interior Highlands Physiographic Province (Madole et al. 1991). The unglaciated Ozark Plateaus overlie a broad asymmetrical cratonic dome; subaerial erosion has exposed the dome's Precambrian core in the St. Francois Mountains (Thornbury 1965). According to Allen et al. (1975), Paleozoic tectonic features are a reflection of Precambrian tectonic elements in that deformation initially occurred during the Precambrian. Erosion of the uplifted Precambrian surface was followed by subsidence during the early Paleozoic era. Tectonic activity throughout the Paleozoic resulted in the formation of arches, basins and faults. Toward the end of the Paleozoic, major uplift, which may be related to the Appalachian Orogeny (Thornbury 1965), occurred along the Ozark Arch. Final uplift, followed by tectonic stability, occurred during the Mesozoic Cretaceous period for most of the Ozark region but extended into the Tertiary and Quaternary in the St. Francois Mountains.

Post-Cretaceous erosion of the gently dipping Paleozoic sedimentary rocks surrounding the Ozark Arch produced a series of escarpments. The Salem Plateau is bordered on the west and east respectively by the Burlington (Eureka Springs) and Crystal escarpments (Marbut 1896). The Eureka Springs Escarpment marks the boundary between younger Mississippian rocks of the Springfield Plateau to the west and the older Ordovician-aged rocks of the Salem Plateau to the east (Thornbury 1965). Three major rock formations outcrop in the Fort Leonard Wood area (Whitefield 1989). The oldest formation, early Ordovician Gasconade dolomite, is exposed in about 12 percent of the installation (Albertson et al. 1995). It is typically a light brownish gray, cherty dolomite that is massive in its upper part and thin to medium-bedded in its lower part (Allen et al. 1975); beds of chert can be more than 1.5 m thick (Whitefield 1989). The Gasconade dolomite is overlain by cherty dolomite and sandstone of the Roubidoux Formation. The Roubidoux Formation is exposed in about 64 percent of the installation and forms the broad upland in its northern part (Albertson et al. 1995). The dolomite is brown to brownish red, fine to medium crystalline rock that is locally sandy (Whitefield 1989) and can contain up to 50 percent chert (Albertson et al. 1995). The Roubidoux sandstone is brown to red in color and composed of fine to medium sand-sized quartz grains. It is locally cherty, and the chert is sandy and oolitic to banded and porcelaneous (Albertson et al. 1995). Jefferson City dolomite is the youngest Ordovician rock, and it outcrops in 17 percent of the base (Albertson et al. 1995). It is a cherty gray to brown (Whitefield 1989), medium-bedded, fine to medium crystalline dolomite that is locally argillaceous with lenses of orthoquartzite, shale and conglomerate (Allen et al. 1975).

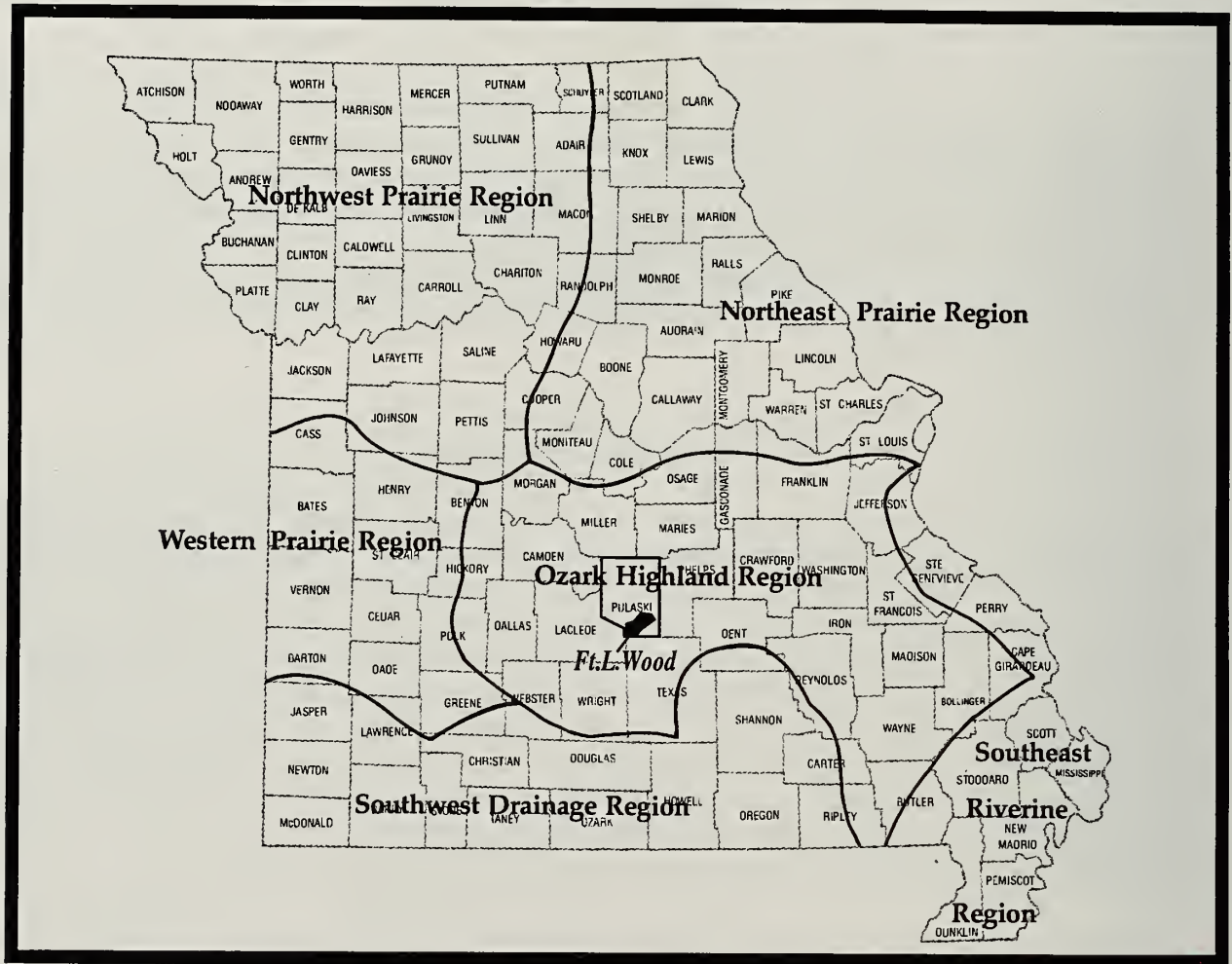


Figure 3. Physiographic Provinces of Missouri and the Location of Fort Leonard Wood (adapted from Chapman 1975).

Although it overlies a structural lowland, the Salem Plateau is a topographic upland (Marbut 1896). Local relief on the upland surface is commonly less than 30 m but can be up to 150 m along major streams (Thornbury 1965). Present-day drainage in the Ozarks probably initiated no later than the Tertiary (Allen et al. 1975; Thornbury 1965). The Big Piney River and Roubidoux Creek, which are north-flowing tributaries of the Gasconade River, itself a north-flowing tributary of the Missouri River, display a radial drainage pattern reflective of the underlying domal structure (Marbut 1896). A Tertiary age for valley incision implies that the uplands overlooking Roubidoux Creek and Big Piney River are also pre-Pleistocene in age (Madole et al. 1991). Upland divides on the Salem Plateau are commonly wide and flat or gently undulating in areas away from major river valleys. However, they can be almost absent near the larger streams (Marbut 1896). According to Krusekopf (1958) broad, rolling upland divides characterize surfaces that are relatively gravel-free. Although nearly all Ozark soils on the uplands possess some chert gravels, either throughout the entire profile or in the subsoil and

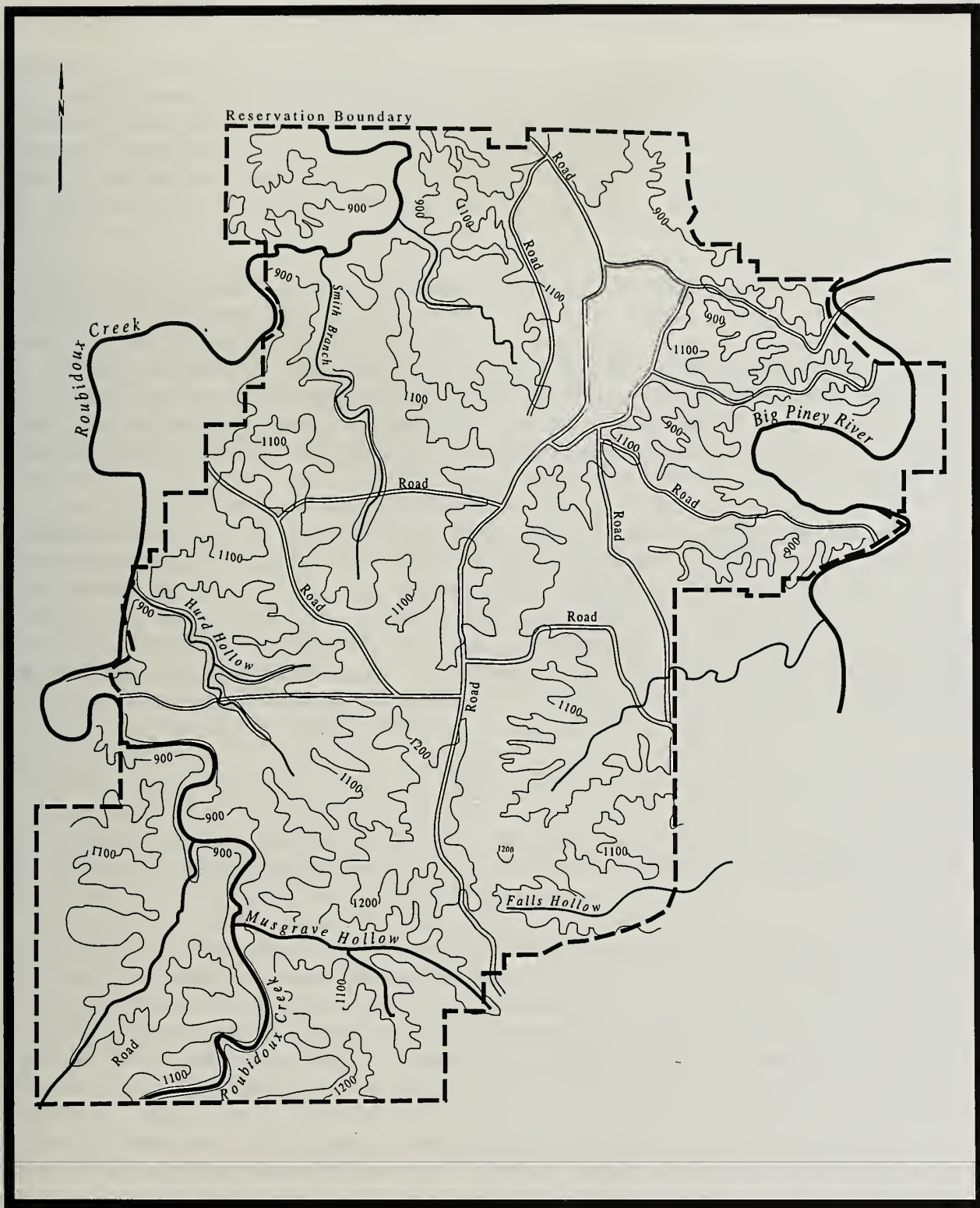


Figure 4. General Topographic Characteristics of Fort Leonard Wood.

substrate, Krusekopf (1942) believes the distribution of surficial chert gravels is a function of microclimate. South-facing slopes tend to have stony soils whereas north-facing slopes do not. Krusekopf (1942) asserts that the drier conditions associated with the south-facing slopes decrease the rate of chert decomposition (hydrolysis), resulting in an increase in the number of stones at the surface. In contrast, the wetter conditions on the north-facing slopes cause greater weathering of the chert, resulting in fewer (to no) rock fragments at the surface and the development of a silica-rich hardpan (indurated horizon) below the B horizon.

Areas of karst topography occur most frequently in the Gasconade (Albertson et al. 1995) and Roubidoux (Albertson et al. 1995; Allen et al. 1975) formations. Sinkholes (Allen et al. 1975) and rockshelters (Paul Albertson, personal communication 1996) are typical of the Roubidoux Formation, whereas caves and springs are common in the Gasconade Dolomite (Albertson et al. 1995). The Roubidoux dolomites and sandstones are relatively permeable rocks, and the residuum formed in them also tends to be highly permeable. Streams in these areas tend to be diverted to subsurface conduits, resulting in low surface runoff (Williams and Maxwell 1975) and in reduced potential for erosion (Thornbury 1965).

More specifically, Fort Leonard Wood occupies part of the broad dissected uplands between the Big Piney River and Roubidoux Creek (Figure 4), which form parts of the eastern and western boundaries of the installation respectively. Both streams flow northward and are tributaries of the Gasconade River, which is part of the Missouri River drainage. Most of the installation is within the upland interfluvium between the Big Piney River and Roubidoux Creek. This zone is not as deeply dissected as the areas along the major watercourses and has distinctive geologic, soil and biotic characteristics.

Soils

Soils on the Ozark Plateau range in age from Tertiary to Holocene. Tertiary residuum, which is preserved throughout the Salem Plateau, can exceed 45 m in thickness (Albertson et al. 1995; Krusekopf 1958); it is thickest on level divides and moderate slopes and thinnest on steep slopes (Madole et al. 1991). The residuum on the Ozark Plateau is typically a reddish, stony (cherty) clay (Williams and Maxwell 1975) similar to the red clay soil, or terra rossa, that is characteristic of landscapes underlain by carbonate rocks in other parts of the world. Although terra rossa soils traditionally have been associated with Mediterranean-type climates, they are not restricted to such zones; they are known to occur in the midcontinental United States (Frolking et al. 1983; Olson et al. 1980), in the Middle East (Barshad et al. 1956), in eastern Europe (Ciric and Senic 1985; Glazovskaya and Parfenova 1974) and in western Europe (Sevink and Verstraten 1979; Verstraten and Sevink 1979).

Terra rossa soils are characteristically high in kaolinite clays whereas the underlying unweathered limestone or dolomite is not (Barshad et al. 1956); Ozark carbonate rocks are high in illite (Scrivner 1975). In spite of the mineralogical differences, which is attributed to neoformation and/or alteration of clay minerals due to weathering (Madole et al. 1991), terra rossa soils are thought to have formed in place in the underlying carbonate rock. According to Duchaufour (1977), terra rossa soils form by decalcification of indurated carbonate rocks under alternating wet and dry seasons. During the wet

season, iron in the bedrock parent material is released upon weathering (decarbonation) but precipitates out in the weathered profile (where it binds to clay-sized particles) during the dry season. Duchaufour found that residuum formed in iron-poor rocks will not rubify (redden). Rubification, according to Glazovskaya and Parfenova (1974), does not occur because of the presence of primary red-colored minerals, but instead is the result of biochemical weathering. The iron oxides and clays that make up the terra rossa are predominantly insoluble residue left after the carbonates have been removed, although some insoluble minerals may have been added by eolian deposition (Ciric and Senic 1985). The preservation of primary bedrock structures in the residuum suggests an in situ origin and volume-for-volume replacement of dissolved carbonate rock by clays (Frolking et al. 1983; Madole et al. 1991; Williams and Maxwell 1975).

It is generally accepted that formation of terra rossa on limestone and dolomite is a slow process. Therefore, the soil is considered to be fairly old where thick. Ciric and Senic (1985) estimate that 1.5–2.5 million years of weathering is required to produce a 20-cm thick terra rossa developed in a limestone with .3 percent insoluble material. Thickness of residuum in the Ozarks varies, depending upon parent material properties. Generally, thicker residuum (averaging 4.5 m) is developed in the Gasconade and Roubidoux dolomites, which have a higher percentage of insolubles (in the form of quartz sand and chert) than does the Jefferson City dolomite, where the residuum averages only 2.4 m thick (Madole et al. 1991). Much thinner residuum (less than 1 m thick) is developed in sandstone where the amount of carbonates is low and the amount of insolubles high (Madole et al. 1991).

Residuum formed in easily weathered Jefferson City dolomite is typically a gravelly red clay with low plasticity; in thicker beds that are more resistant, the residuum is a relatively stone-free, thin plastic clay of low permeability (Williams and Maxwell 1975). The low permeability of these soils inhibits karst formation, and streams tend to maintain a surface flow (Williams and Maxwell 1975). Residuum derived from the permeable Roubidoux Formation sandstones and dolomites is relatively thick and gravelly (gravel content often exceeds 50 percent) (Williams and Maxwell 1975) and highly permeable (Allen et al. 1975). The high permeability of these soils promotes development of karst topography wherein there is a loss of surface water to groundwater flow (Williams and Maxwell 1975). Residual soils formed in the Gasconade dolomite are commonly a gravelly, yellow brown plastic clay or a gravelly, red clay with low plasticity (Allen et al. 1975).

Tertiary residuum in the Ozark Plateaus is buried beneath variably thick Pleistocene loess. Loesses in Missouri were derived from the Missouri and Mississippi river valleys, and their thicknesses decrease with increased distance from the source valley. Consequently, loess ranges from about 30 m thick along the rivers to less than 1 m thick in southern Missouri (Davis 1973; Madole et al. 1991). Illinoian Loveland Loess is preserved along the Missouri River (Bayne et al. 1971a), but it is rarely preserved on the uplands in south-central Missouri (Allen et al. 1975; Madole et al. 1991). In Laclede County, immediately west of Fort Leonard Wood, less than 1 m of Loveland Loess is preserved in a sink, and none is preserved on the surrounding uplands, suggesting a period of widespread erosion between the Illinoian and late Wisconsinan (Allen et al. 1975). However, as Bayne et al. (1971b) point out, the inability to identify Loveland Loess on the uplands may be due to its complete pedogenic assimilation into the Tertiary-Sangamon soil and not to erosion. At least 4.9 m of middle Wisconsinan Roxana Silt may occur along the Missouri River (Bayne et al. 1971a, 1971b). Late Wisconsinan Peoria Loess is the most widespread and recognizable loess in the area (Allen et al. 1975; Krusekopf 1958; Madole et

al. 1991; Scrivner 1975). At Fort Leonard Wood, 45–75 cm of loess is found on the more stable parts of the uplands (Albertson et al. 1995). Johnson et al. (1981) found over 2 m of Peoria Loess preserved locally on the flat uplands near the Pomme de Terre river valley, northwest of Fort Leonard Wood, and Allen et al. (1975) note less than 1.2 m on uplands in Laclede County. Peoria Loess at Fort Leonard Wood is differentiated from the underlying residuum by its less weathered appearance, its high silt content (greater than 75 percent) (Balek, unpublished data) and a general lack of particles greater than 2 mm in diameter. Peoria Loess deposition occurred between 25,000 and 13,000 years ago in southwestern Illinois (McKay 1979), while in the Osage Plains physiographic section (i.e., eastern Kansas, central Oklahoma and west-central Texas) Peoria Loess deposition ceased about 10,500 to 10,000 years ago (Madole et al. 1991). A Holocene (post-9,000 years ago) loess, the Bignell Loess, occurs in parts of the Osage Plains along the Platte and Missouri rivers (Bayne et al. 1971b), but none has been reported in the Fort Leonard Wood area.

Where the Tertiary residuum is completely buried by relatively thick Peoria Loess, the surface soil is developed in the loess and is essentially Holocene in age (i.e., post-13,000 years). Where thin Peoria Loess has been incorporated pedogenically into the residuum such that it is not recognizable as a distinct loessial unit, the surface soil may be Tertiary through Holocene in age and can be considered a relict soil. Relict soils, as defined by Nettleton et al. (1989:59), are "ancient, pedogenic soils that have persisted on land surfaces of Pleistocene or greater age [and] may have been thickened by gradual deposition after the land surface stabilized, but never thickened by deposition so rapid or great that the soil is now a buried paleosol."

Wolf (1989) identifies four soil associations within Fort Leonard Wood that also correlate closely with major physiographic zones. In the uplands between the Big Piney River and Roubidoux Creek is the Lebanon-Plato association. The Lebanon-Plato association consists of silty soils formed in loess deposits that have variable drainage characteristics. The dissected upland interfluvium and the summits and shoulders of larger ridges near major streams are covered by Viraton-Clarksville-Doniphan association soils and were found in all three tracts investigated during this project. These soils are characterized as deep, well-drained and silty to cherty. They formed in thin loess deposits overlying the cherty Jefferson City/Cotter dolomite residuum. Steep side valleys and bluffs in the major streams are covered by the Clarksville-Gepp association and were found in all survey tracts investigated during this project. These soils are thinner, well- to excessively drained and cherty to very cherty. These two soil associations are found only in the McCann Cemetery and Quarry tracts. Major stream valleys and some minor valleys are covered by Nolin-Huntington-Kickapoo association soils. This soil association is present in the Northern USFS Joint Use Land Tract that was surveyed during this project in addition to the Clarksville-Gepp and Viraton-Clarksville-Doniphan associations. These soils are deep, nearly level to gently sloping silty and loamy soils on floodplains and adjacent terraces. Roubidoux Creek terraces within this tract are of variable ages, ranging from essentially modern to 55,000 years old (Albertson et al. 1995). The soil associations are further divided into several soil series (Wolf 1989), which exhibit distinctive and consistent texture, structure and drainage characteristics. The soil series for each site are described in the individual site discussions.

Climate and Climatic Change

The climate of the Fort Leonard Wood area is midcontinental, with warm summers and cool winters (Wolf 1989). Average annual rainfall is about 100 cm, distributed relatively evenly throughout the year. The driest months tend to be during the late fall through early winter, while the wettest are during spring and early summer, although rainfall tends to be rather evenly distributed (Wolf 1989:84, Table 1). Research has indicated that this pattern has not been stable through the Holocene; the early Holocene climate was cooler and wetter than present. This climate regime then shifted during the middle Holocene to warmer and drier conditions (Bryson et al. 1968; Deevey and Flint 1957; Wendland 1978). This period, known as the Hypsithermal Interval, took place between 8,500 and 5,000 years ago. The effect of this climate change on human populations remains poorly understood and somewhat controversial at present. Minimally, by 5,000 years ago, the climate and vegetation patterns characteristic of the Fort Leonard Wood area began to stabilize in their modern forms.

Floral and Faunal Communities

Flora

Braun (1950) has classified the flora in the Fort Leonard Wood area as part of the Southern Division of the Oak Hickory Forest. This division is characterized by southern oak species with pine present locally. Within the oak-hickory forest species composition differs with slope aspect, orientation, drainage, and soil characteristics. Cedar is often present on the most xerophytic slopes. The oak-hickory forest is interrupted by occasional prairie openings. But within this classification, the Ozark Highlands also exhibit a wide diversity of plant communities corresponding with topographic, geologic and hydrologic variability within the region (Steyermark 1963). Additional distinctive plant communities are found on rolling uplands, poorly drained uplands, steep slopes, bottomland terraces, floodplains, near springs and sinkholes, and in ravine bottoms (Harland Bartholomew and Associates 1992:9). Recently, the United States Forest Service identified over 40 plant communities found in the adjacent Mark Twain National Forest (Miller 1981).

The present vegetation differs from the prehistoric and early historic vegetation patterns. Schoolcraft (1853) traveled across the Ozarks in 1818 and noted that large tracts in the Ozarks were either unforested or had stunted tree vegetation. This vegetation pattern may have been either culturally promoted by Native Americans setting fires to improve hunting conditions (Chapman 1946) or due to the development of nearly impermeable fragipan soils that inhibit root growth on flat and poorly drained uplands (Rafferty 1980). In other areas, large tracts of pine forest covered the well-drained uplands, prairies were found on flat uplands, oak-hickory stands were present in high elevations, and cane thickets were abundant in bottomland settings (Harland Bartholomew and Associates 1992).

A detailed list of species present at Fort Leonard Wood has been presented by Niquette et al. (1983). The present vegetation is dominated by oak forests on uplands and side slopes, with white, post, black, and blackjack oaks most common. The valleys support a greater variety of trees, with sycamore, ash, cottonwood, sugar maple, walnut, butternut, hackberry, red oak, willow, and pecan present.

Fauna

Niquette et al. (1983) provide a detailed listing of fauna present in the Fort Leonard Wood area. The faunal species include those usually encountered in the North American midcontinent. The most common large mammal in the region is the white-tailed deer, and a variety of medium-sized mammals (raccoon, squirrel, mink, muskrat, beaver, red fox, gray fox, skunk, opossum, cottontail rabbit, and coyote) is also present (Harland Bartholomew and Associates 1992:10). Jones and Birney (1988) identify most of the mammalian species present at Fort Leonard Wood as being associated with the Eastern and Prairie/Grassland zoogeographic units. Terrestrial bird species that were also of potential economic importance include wild turkey, quail and prairie chicken. As Fort Leonard Wood is not within a major migratory route, seasonal fluctuations of ducks, geese and swans are minimal (Bellrose 1976). Lastly, the rivers and streams of the Fort Leonard Wood area have been noted to contain numerous sunfish, catfish, sucker, and gar species (Pflieger 1975).

Cultural Study Units

Based on the physiographic characteristics of the Fort Leonard Wood region, the installation has been incorporated into a number of different cultural study unit models. The philosophy behind the creation of the cultural study unit models is that particular characteristics of the landscape, including geology, hydrology, soils, flora, fauna, and climate, affect the pattern of human occupation within a region. Chapman (1948a, 1975, 1980) used the natural divisions of Missouri (see Figure 2) to define environmentally based units with which to compare the development of cultural traditions. Chapman (1975) included the Fort Leonard Wood area in the Ozark Highland archaeological-physiographic region, with Pulaski County divided between the Lower Osage and Gasconade localities. Elaborating on the concept of combined cultural and natural areas within Missouri, Weston and Weichman (1987) employ drainages as the basis for cultural divisions. In this model, Fort Leonard Wood is in the Gasconade Study Unit.

At a finer scale, Edging (1992) has defined a series of cultural resource zones for Fort Leonard Wood (Figure 5). This model was originally designed as a cultural resource management tool, although it is also useful in providing an initial basis of comparison regarding human use of the base. Drainage, physiographic and soil series characteristics divide Fort Leonard Wood into five broad zones. The Cantonment zone is located on the northern end of the base and consists of uplands between the Big Piney River and Roubidoux Creek. This zone includes military facilities and is viewed as having low potential for containing intact prehistoric cultural resources because of construction activities. The Interior Uplands resource zone covers the remainder of the uplands south of the cantonment. The potential for prehistoric and historic sites is generally low because of distance to permanent water sources. The Lower Roubidoux resource zone includes the Roubidoux Creek valley and adjacent terraces and uplands in the northwest corner of the installation. The Upper Roubidoux resource zone consists of an area similar to the Lower Roubidoux zone but in the southwest portion of the installation. Finally, the Big Piney resource zone includes the Big Piney River valley and adjacent terraces and bluffs in the northeast corner of the installation. Prehistoric site density is highest in these latter three zones.

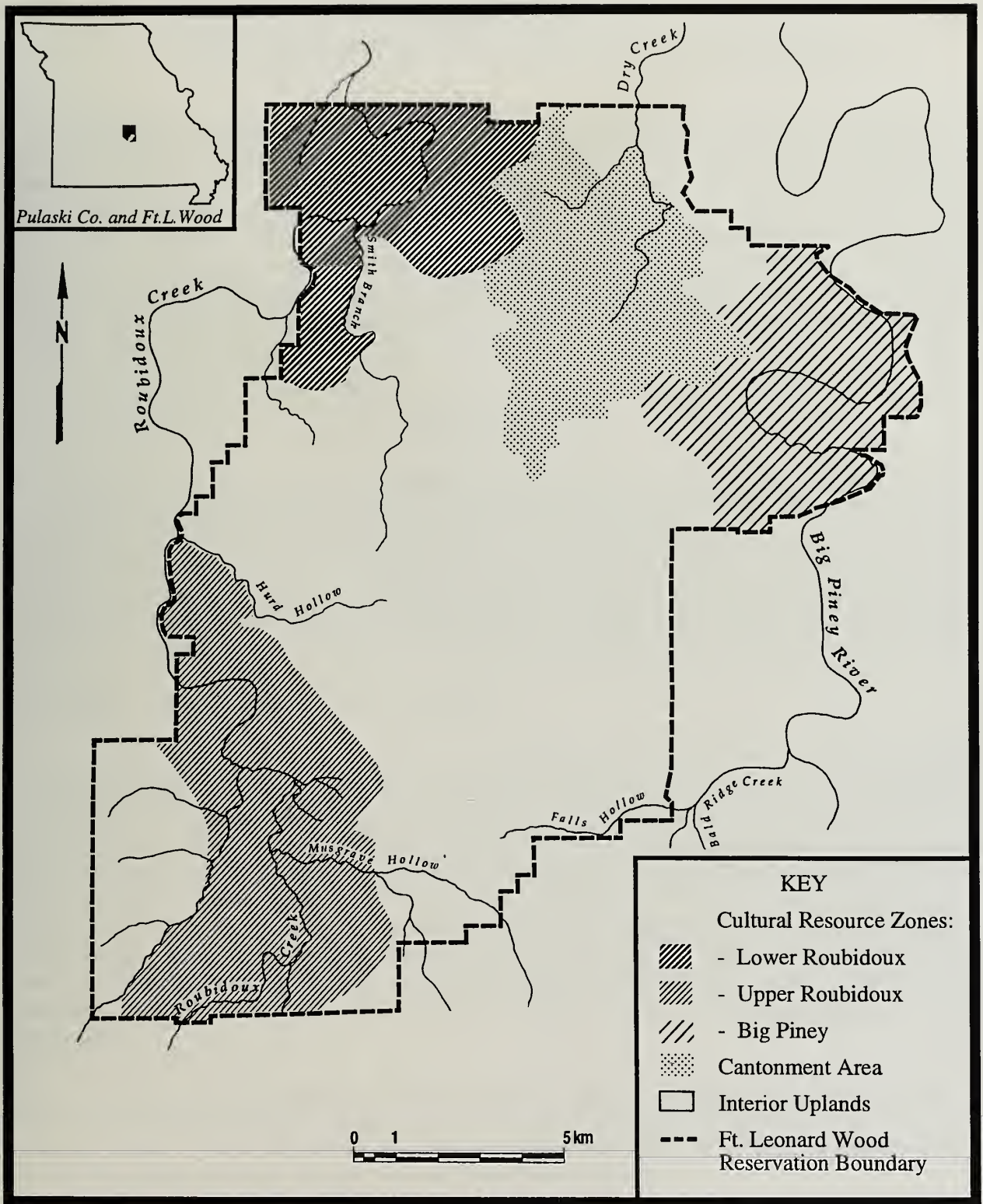


Figure 5. Cultural Resource Zones Within Fort Leonard Wood.

CHAPTER 3.

CULTURAL OVERVIEW AND REVIEW OF PREVIOUS WORK

This section presents a general outline of prehistoric and historic cultural development in the southern Midwest area and Ozark region and is based on earlier reports (Ahler, Kreisa, McDowell, and McGowan 1995; Ahler and McDowell 1993; Kreisa 1995; Kreisa et al. 1996; McGowan 1996; McGowan et al. 1996) and regional archaeological syntheses, especially Chapman (1975, 1980), Douthit et al. (1979), Wright (1987), the prehistoric overview presented in Harland Bartholomew and Associates (1992), and an historical overview of Fort Leonard Wood (Smith 1993). Information specific to the Gasconade drainage has been derived from syntheses by McMillan (1965) and Reeder (1988). This overview provides an interpretive framework for evaluating archaeological resources at Fort Leonard Wood.

Cultural Overview

The cultural-historical sequence for Missouri is divided into six major periods (Figure 6), a number of which are subdivided into early, middle and late subperiods (Chapman 1975, 1980). The prehistory of the area appears to have experienced a number of developments similar to those identified in other areas of eastern North America, including population increase, focalization on locally abundant and seasonal foodstuffs, the eventual adoption of cultivated plant foods, and increasing social and political complexity. Expressions of these developments differ across the state, though, since it encompasses a number of different regions, including the Midwest, the Great Plains, the Southeast, and the Ozarks.

Paleoindian Period (14,000 to 10,500 years ago)

It was during the Paleoindian period that the earliest occupation of the New World took place, when people migrating from northern Asia crossed an exposed land mass that is now covered by the Bering Strait. This period is well-documented in portions of the United States where a series of distinct lanceolate hafted bifaces is associated with regional traditions. These bifaces have long, narrow flakes removed from the base, forming a characteristic channel or flute to facilitate hafting onto bone or wood handles. Many of the more refined specimens, made from high-quality nonlocal chert, indicate a high degree of mobility and participation in exchange networks. Paleoindian groups were small, highly mobile, and integrated into egalitarian bands. Settlement systems were apparently based on residential mobility. Subsistence was generalized, exploiting locally available megafauna and a variety of smaller terrestrial mammal species as well. Patterns of plant use for Paleoindian groups are poorly documented.

No major Paleoindian sites are reported for the Gasconade drainage, and no sites of this time period are reported from Fort Leonard Wood or the adjacent Houston-Rolla District of the Mark Twain National Forest. A few isolated surface finds of Paleoindian points are reported in Chapman (1975) for the Gasconade drainage, though none are from Pulaski County.

YEARS B.P.	<i>PERIOD</i>	SUB PERIOD	HORIZON - PHASE
Present	<i>HISTORIC</i>		
500	<i>MISSISSIPPIAN</i>		Late Maramec Spring Phase
1000	<i>WOODLAND</i>	Late	Early Maramec Spring Phase
1,600		Middle	Spring Creek Complex
2,500		Early	
3,000	<i>ARCHAIC</i>	Late	Sedalia Phase or James River Complex
5,000		Middle	
8,000		Early	Tick Creek Complex
10,000	<i>PALEO INDIAN</i>	Late	Dalton Complex
		Middle	
12,000		Early	

Figure 6. Chronological Sequence of the Fort Leonard Wood Area.

Dalton Period (10,500 to 9,800 years ago)

The transition from the late Pleistocene to Holocene environment brought about extinctions of megafauna across North America and the development of modern biotic regimes. Archaeologically, this transition is associated with the Dalton culture (Goodyear 1982). This manifestation originally was defined in northern Arkansas and southern Missouri (Goodyear 1974; Morse 1973; Morse and Goodyear 1973; Price and Krakker 1975) and is characterized by a chipped-stone tool assemblage that includes the distinctive lanceolate, unfluted Dalton projectile point and its variants, chipped-stone adzes and spurred end scrapers. Dalton period settlement patterns and systems have been examined in detail in the southern Ozarks and Missouri Bootheel region (Morse 1975, 1977; Schiffer 1975). Settlement includes a variety of site types, consisting of base camps occupied for long periods of time, resource extraction camps, smaller generalized residential camps, and special-purpose cemetery sites (Goodyear 1974), suggesting a logistically organized system oriented toward the exploitation of seasonally abundant aquatic resources by larger population aggregates.

Several important Dalton components have been located in Missouri, including stratified deposits at Rodger's Shelter (Kay 1980), Graham Cave (Klippel 1971; Logan 1952) and Arnold-Research Cave (Shippee 1966). Two Dalton sites have been reported from Fort Leonard Wood; 23PU190 (Niquette et al. 1983) and 23PU494 (Ahler and McDowell 1993) are located in the Interior Uplands resource zone. Phase II investigations at Sadie's Cave (23PU235) yielded evidence of a Dalton component at that site as well (Ahler, Kreisa, McDowell, and McGowan 1995).

Early Archaic Period (9,800 to 7,000 years ago)

More common are Early Archaic period sites characterized by a variety of lanceolate (Rice Lanceolate), contracting-stemmed (Hidden Valley), straight-stemmed (Hardin), side-notched (Graham Cave), corner-notched (Thebes, St. Charles, Kirk, Jakie Stemmed) and bifurcate-base (Rice Lobed and LeCroy) hafted bifaces. The Ozark Highland region contains a number of sites, mostly caves/rockshelters, with significant Early Archaic components. These include Jakie Shelter, the Rice site and Standlee Shelter along the Table Rock Reservoir, Rodger's Shelter in the Pomme de Terre drainage, and Tick Creek Cave in the Gasconade drainage. The hafted bifaces listed above compare favorably with many of the hafted bifaces described by Roberts (1965) and McMillan (1965) in their original description of the Early Archaic Tick Creek Complex. However, Chapman (1975) points out that Middle and Late Archaic materials represented by later point types (Stone Square Stemmed and large sided-notched points) also may have been included in the original Tick Creek Complex assemblage, and Reeder (1988:185) suggests that the complex should be either redefined or abandoned. Based on work in other portions of the Midwest, it is likely that the temporal and functional variability represented by the Tick Creek Complex can be separated into more restricted phases and components through excavation of stratified sites.

Early Archaic period sites are usually small sites with relatively few artifacts, suggesting that populations were composed of small, highly mobile residential groups organized into egalitarian bands. Local populations may have coalesced periodically into larger population aggregates to take advantage of seasonally abundant resources, but these were probably episodic events of short duration.

Several sites at Fort Leonard Wood and the nearby Houston-Rolla Ranger District have yielded Early Archaic points. These include 23PU229 (an upland lithic scatter), 23PU304 (a floodplain lithic scatter), 23PH231 (a multicomponent upland lithic scatter), and 23PU210 (a disturbed stratified cave in the Upper Roubidoux resource zone). At the Kofahl Tract on the Big Piney River upstream from Fort Leonard Wood, four sites yielded Early Archaic points (Fraser et al. 1981). Seven Early Archaic sites were identified in the Big Piney and Upper Roubidoux resource zones through recent surveys by the University of Illinois (Ahler and McDowell 1993; McGowan 1996). Phase II testing recently has been conducted at one of these sites, 23PU482 (Kreisa 1995).

Middle Archaic Period (7,000 to 5,000 years ago)

In the Midwest this cultural period is marked by a shift in settlement toward major river-valley margins and increased use of aquatic resources by larger population aggregates (Ahler 1984; Brown and Vierra 1983; Jefferies and Butler 1982; Styles 1986). Hafted bifaces characteristic of this period include large and small side-notched points (Godar, Matanzas, Raddatz, and Big Sandy), small corner-notched points (Jakie Stemmed) in the early part of the period and medium to large corner-notched/expanding stem points (Big Creek, Saratoga cluster and Table Rock Stemmed) late in the period, and large straight-stem points (Stone Square Stemmed, Smith/Eva and Karnak). No specific Middle Archaic phase or complex has been defined for the Gasconade drainage, although McMillan (1965) describes several points characteristic of a Middle to Late Archaic complex. New tool types such as the fully grooved axe and ground-stone celt were added to the technological assemblage during this period. Ozark-region sites with major Middle Archaic occupations include Rodger's Shelter, Jakie Shelter, the Rice site, Standlee Shelter, and possibly Tick Creek Cave.

Based on the recovery of only moderate numbers of Middle Archaic artifacts from sites in the Gasconade drainage (Tick Creek Cave, Goat Bluff Cave and Miller Cave [McMillan 1965; Roberts 1965]), Chapman (1975) proposes that the Gasconade drainage was used mainly for hunting during the Middle Archaic by populations with base camps located outside the drainage. This conclusion may be an artifact of sampling, since Middle Archaic sites apparently are fairly numerous at Fort Leonard Wood. At least 23 sites have yielded Middle Archaic materials (Ahler and McDowell 1993; Markman and Baumann 1993; Moffat et al. 1989; Niquette 1984; Niquette et al. 1983). Of these, Phase II investigations have been conducted at 23PU251, 23PU368, 23PU235, and 23PU457 (Ahler, Kreisa, McDowell, and McGowan 1995; Ahler, Kreisa, Theler et al. 1995; Kreisa 1995).

Late Archaic Period (5,000 to 3,000 years ago)

The Late Archaic period in the Ozarks is marked by continuation in the manufacture of many projectile point styles in use at the end of the Middle Archaic period. While large side-notched types are not part of the assemblage, the medium and large corner-notched/expanding stem points apparently continued into the first half of the Late Archaic period. New hafted biface types were introduced, including a variety of corner-notched (e.g., Afton), stemmed (Burkett, Etley) and lanceolate (Sedalia, Wadlow) types. Distinctive tools include the triangular, unifacial Clear Fork gouge, possibly used as a woodworking tool, and the rectanguloid, bifacial Sedalia Digger, possibly used for grubbing or digging. A greater variety of ground-stone tools, including 3/4-grooved axes, celts, pestles, manos, bannerstones, and plummets, is also present in Late Archaic assemblages. Many of these tools are

associated with plant processing. Increased reliance on plants is supported by recovery of some of the earliest domesticated squash and gourd remains in the eastern United States from Late Archaic contexts at Phillips Spring (Chomko 1978; Kay et al. 1980).

Chapman (1975, 1980) indicates that the entire Late Archaic adaptive strategy persisted into the Woodland period in the Ozark region. Unfortunately, many of the projectile point types listed above have been found in poorly dated or mixed deposits containing both Woodland and Late Archaic cultural materials. The absence of well-dated stratigraphic contexts poses a serious drawback to basic cultural historical interpretations in the Ozarks.

Two local Late Archaic cultural manifestations have been defined for areas adjacent to Fort Leonard Wood. The James River complex is based on assemblages from Table Rock Reservoir and includes Afton, Smith Basal Notched, Stone Square Stemmed, and Table Rock point types (Chapman 1960). The Sedalia Complex is centered in the lower Missouri and Osage drainages and includes Etley Stemmed and Sedalia Lanceolate point types (Chapman 1975). A review of previous reports indicates that no Sedalia points, Sedalia Diggers or Etley points have been recovered from Fort Leonard Wood. Late Archaic sites at Fort Leonard Wood lack the diagnostics associated with the Sedalia complex, while the base's geographic and physiographic position make it less likely to be associated with the James River complex. Late Archaic components are common on the installation, with at least 20 sites having components assigned to this period (Ahler and McDowell 1993; Markman and Baumann 1993; Moffat et al. 1989; Niquette 1984; Niquette et al. 1983). Phase II investigations have been conducted at 23PU492, 23PU249, 23PU235, and 23PU457 (Ahler, Kreisa, McDowell, and McGowan 1995; Ahler, Kreisa, Theler et al. 1995; Kreisa 1995).

Early Woodland Period (3,000 to 2,500 years ago)

Traditionally, the beginning of the Woodland period is marked by the appearance of pottery in archaeological assemblages. In many areas, subsistence, settlement and social organization remain essentially unchanged from Late Archaic patterns (see Chapman 1980; Farnsworth and Emerson 1986). Distinctive projectile point styles are few in number, and a local expression of Early Woodland adaptation has not been defined. Neither have pottery types indicative of the Early Woodland period been identified in the region. Chapman (1980) maintains that Late Archaic adaptations, including many projectile point styles, were maintained in the Ozarks well into the Early and Middle Woodland periods.

Niquette et al. (1983) and Niquette (1984) list nine sites that have been assigned to the Early Woodland period at Fort Leonard Wood. However, these assignments are based on recovery of Gary and Langtry points, which have a long history of manufacture that began in the terminal Archaic (3,500 years ago) and continued at least through Middle Woodland times (1,500 years ago). It may be more accurate to assign sites with these sites to a general Woodland affiliation rather than to a more specific time period.

Middle Woodland Period (2,500 to 1,600 years ago)

As with the Early Woodland period, a local Middle Woodland manifestation has yet to be defined for the Ozark region. If the distinctive Middle Woodland Hopewell ceramic styles are absent, local Middle Woodland expressions are difficult to identify. Other artifacts that have been used as markers of the Middle Woodland period include Snyders Corner-Notched projectile points and small lamellar blades (Montet-White 1968), neither of which is common in the Gasconade drainage.

The lack of evidence for participation in the panregional Hopewell network has been interpreted by Chapman (1980) and McMillan (1965) as evidence for absence of permanent Middle Woodland settlement in the Gasconade drainage, or even abandonment of the region. Based on work at the Feeler site, however, Reeder (1982, 1988) defined the Middle Woodland Spring Creek complex and proposed temporal boundaries of A.D. 1-400. This alternative interpretation of Middle Woodland adaptation indicates the presence of a resident population with an essentially aceramic technology identified by Kings and Snyders corner-notched projectile points (Reeder 1988).

Thin, grit-tempered pottery similar to Middle Woodland utilitarian wares from other parts of the Midwest has been identified in low frequencies at a few sites in the Gasconade drainage, including at Fort Leonard Wood (23PU152 and 23PU210 [Niquette et al. 1983] and 23PU265). Other sites on base have been assigned to the Middle Woodland period based on identification of Snyders projectile points or lamellar blades. It is unclear whether other Middle Woodland cultural patterns common in the Midwest, such as intensive use of native cultigens, two-level settlement hierarchy or social differentiation in mortuary practices, are expressed in any local Middle Woodland period manifestation. Phase II investigations have been conducted at 23PU265, 23PU173, 23PU291, and 23PU235, all of which have Middle Woodland or Middle to Late Woodland components (Ahler, Kreisa, McDowell, and McGowan 1995; Ahler, Kreisa, Theler et al. 1995).

Late Woodland Period (1,600 to 1,100 years ago)

Late Woodland culture is well-expressed in the Gasconade drainage. Locally, Late Woodland sites are associated with the presence of cordmarked or plain limestone/dolomite-tempered ceramics. Diagnostic Late Woodland lithic artifacts include Kings Corner-Notched and Rice Side-Notched in the early part of the period and a variety of small arrow points (Crisp Ovate, Sequoyah, Scallorn, and Hayes, among others) in the later part of the period. In addition, there appears to be some degree of social differentiation in mortuary programs; some individuals were interred in rock cairns located on upland prominences and others in caves and rockshelters. The local Late Woodland manifestation is the Maramec Spring Focus (Marshall 1958, 1965), which subsequently has been divided into early and late Maramec Spring phases (Reeder 1988). Maramec Spring phase settlement patterns include extensive villages in both valley and upland ridge crest settings, smaller hamlets and extractive camps, and extensive use of caves and rockshelters, probably for specialized activities.

The Late Woodland period is the best documented period at Fort Leonard Wood and in the Gasconade drainage in general. Maramec Spring occupations (either early or late) have been identified at more than 35 sites on Fort Leonard Wood (Ahler and McDowell 1993; McGowan et al. 1996; Markman and Baumann 1993; Moffat et al. 1989; Niquette 1984; Niquette et al. 1983). Phase II

investigations have been conducted at 23PU426, 23PU492, 23PU172, 23PU248, 23PU249, and 23PU265 (Ahler, Kreisa, McDowell, and McGowan 1995; Ahler, Kreisa, Theler et al. 1995; Kreisa 1995).

Mississippian Period (1,100 to 300 years ago)

The term Mississippian generally is used to denote both the segment of time following the Late Woodland Period and a particular cultural tradition. Culturally, in the major river valleys of the southern Midwest and much of the Southeast, this period is marked by technological changes such as shell-tempered pottery and use of the bow and arrow and changes in social integration and complexity identified with hierarchical settlement systems, large town-and-mound complexes, elaborate elite burial ceremonialism, and inferred differential access to subsistence resources. The Gasconade drainage apparently does not contain a well-developed Mississippian cultural expression. Instead, the Late Woodland Maramec Spring cultural focus continued, with the addition of a few elements indicative of interaction with Mississippian peoples or peripheral participation in Mississippian ceremonial/ideological/exchange systems, such as occasional shell-tempered pottery, rare incising and punctuation on ceramic vessels, and occasional recovery of exotic marine shell artifacts.

No Mississippian local manifestation has been defined clearly for the Fort Leonard Wood area. While Mississippian influences are apparently represented in some of the late Maramec Spring phase ceramic assemblages, the degree of local interaction and participation in the larger Mississippian cultural system has not been defined.

Historic Period (300 years ago to present)

Smith (1993) provides an excellent summary and developmental context for the historic period in the Ozarks and at Fort Leonard Wood in particular. The following summary is extracted from his report; additional information is found in McGrath and Ray (1987).

In the eighteenth century, Pulaski County and the Fort Leonard Wood area was inhabited by the Native American Osage tribe, who used the area mainly for hunting rather than permanent habitation. In the late eighteenth and early nineteenth centuries, the area also came to be populated by small numbers of Kickapoo, Delaware, Shawnee, and Cherokee, who had been driven westward by expanding Euroamerican and African-American settlement. All remnants of these tribes had been removed from Missouri by about 1830.

The first non-Native American settlers in the region were French explorers and lead miners who began traveling through the Ozarks as early as 1719. French settlement in the Ozarks was sparse, and its effect on the landscape and archaeological record is minimal. American settlement of the area began around 1800, with the occupation of the area by scattered pioneer hunters, subsistence farmers and lumbermen. Most settlements were located in the larger stream valleys. Gradually, more people arrived in the area, but the rugged topography kept population levels low. Most pioneers in the early nineteenth century bypassed the Ozarks in favor of the more abundant and fertile farm territories along major river valleys such as the Missouri, White and Arkansas rivers.

Pulaski County was organized in 1833, and increasing numbers of permanent settlers arrived from eastern states. The settlement pattern appears to have been one of detached residences or farmsteads and hamlets scattered along rivers and larger creeks. Actual farming was done in small floodplain plots, with house locations on valley-margin foot slopes or side slopes. Lumbering, hunting and subsistence farming remained the major occupations. By 1860, population levels were rising, road systems had been constructed, and railroads were helping to develop the lumber industry in the area. Civil War actions in the county resulted in abandonment of many rural farmsteads and general economic decline.

Repopulation of the area began again after the Civil War, but the landscape and farmsteads had been affected adversely by abandonment. Fueled by construction of a railroad through the county in 1867, population increased greatly and economic concerns began to focus on rural industries, especially lumbering. Railroads also brought material goods into the area, promoting a change from self-sufficient farming/hunting/lumbering households to more consumer-oriented households linked to, and more dependent on, outside markets and manufactories. Cross-tie production was the major industry for rural upland settlers without access to good river bottom farmland. This occupation was the main rural industry in the county from the 1870s through World War I.

The economic and cultural prosperity of the area reached its peak around 1910. Soon after that, overcutting of lumber resources and soil erosion brought economic decline and depopulation to southern Pulaski County. The area also was affected strongly by the Great Depression. The largely self-sufficient farmers and hunters that dominated the Ozark population of the nineteenth century had given way to larger consumer-and-producer communities with increasingly intimate ties to regional and national economies. Population peaked around 1910 and remained stable until about 1940. Several small crossroads communities located within the boundaries of Fort Leonard Wood had been established in the nineteenth century and continued to flourish during this period. The largest and most economically important was Bloodland; other trading communities included Big Piney, Cookville, Bailey, Moab, Wharton, Wildwood, and Tribune.

The 1930s witnessed the increasing emergence of the federal government as an economic and social factor in Pulaski County. Various projects sponsored by the U.S. Department of Agriculture and the Civilian Conservation Corps (CCC) directly affected economics and population in the Fort Leonard Wood area. The CCC had established numerous camps within the Mark Twain National Forest and the present Fort Leonard Wood boundary.

In 1940, the U.S. Army announced the planned purchase of 65,000 acres in southern Pulaski County. This created an immediate massive influx of laborers and support personnel into the area. As many as 30,775 workers camped within a 50-mile radius of the base (Mayes 1941, in Smith 1993). The economic and social transformation of the area has had a lasting effect on local communities. The resident populations of Bloodland and other small communities located within the installation boundaries were displaced, and the former hamlets were razed. Small communities outside the base (Waynesville, St. Robert) witnessed unprecedented economic and population growth. After World War II, population in the area and military use of the base fluctuated greatly until it was given permanent status in 1965.

Previous Investigations

The following summary has been drawn mainly from earlier reports (Ahler and McDowell 1993; Ahler, Kreisa, McDowell, and McGowan 1995; Baumann and Markman 1993; Kreisa 1995; Kreisa et al. 1996; McGowan 1996; McGowan et al. 1996; Markman 1993; Markman and Baumann 1993; Moffat et al. 1989; Niquette 1984; Niquette et al. 1983) and a dissertation (Reeder 1988) of work conducted at Fort Leonard Wood and in adjacent areas. Synopses of these previous investigations are presented below.

Previous Work in the Gasconade Drainage

The first reference to archaeological sites in the region around Fort Leonard Wood was made early in the nineteenth century by Beck (1975[1823]), who described the remains of a prehistoric village in Pulaski County. Later, in a history of Missouri, Conant (1879) noted the presence of prehistoric remains in caves, rockshelters and mounds in the Gasconade area. This work included the first report on an excavation in this area, a cave site containing human burials. The Goodspeed Publishing Company (1974[1889]) later described mounds also located in Pulaski County. Both Beck and the Goodspeed Publishing Company made reference to stone walls, and the latter noted that some had burials beneath them. Later discussions of mounds, rock cairns, villages, campsites, and caves/rockshelters were made by Bushnell (1904) and Houck (1908).

The first scientific investigations in central Missouri were made by Fowke in the early twentieth century (Fowke 1922, 1928). Several of the sites he visited are located on Fort Leonard Wood; namely, Kerr Cave, the Davis caves and Miller Cave. The latter produced artifacts assignable to the Early Archaic through Late Woodland periods, and possibly into the Mississippian period. Fowke, unfortunately, was interested mainly in lithic artifacts and hoped to demonstrate a relationship between early American cultures and the European Paleolithic, ultimately ignoring most other types of artifacts. Later, Fenenga (1938) reported on the ceramics from six caves, including four in Pulaski County. He developed a ceramic classification from the excavated materials, finding two ceramic types: one grit-tempered and one shell-tempered. These were associated with the Woodland and Mississippian cultures, respectively.

By the 1940s, little work had been done in the region, and Chapman (1946, 1947, 1948a, 1948b), who was developing a statewide cultural sequence, was faced with a general lack of data. There was little evidence of Paleoindian or Archaic occupation, but he was able to identify a "Late Woodland Highland Aspect" for the area.

Beginning in the 1950s, some of the first investigations driven by historic preservation concerns were carried out in the region. Shippee began a survey of the proposed Richland Reservoir in 1957 (Anonymous 1957; McMillan 1965), and Marshall (1963, 1965, 1966) worked on the Meramec River and near the headwaters of the Bourbeuse and Dry Fork rivers. In 1961 McMillan (1963, 1965) conducted a large-area survey of the Gasconade River and its major tributaries. As a result, 160 sites were identified, and test excavations were made at several of them. These sites included villages or campsites, caves/rockshelters and cairns. It was noted that villages and camps were usually located at the base of bluffs, on second terraces, or near the mouths of hollows and springs. Cairns were most

often found on bluff tops over large streams, and major villages were often at the mouth of large tributaries.

In addition to these surveys, investigations at individual sites also were made. Descriptions of these can be found in site reports by Delling (1962a, 1962b), McMillan (1962), Price (1964a, 1964b), and Roberts (1965). Roberts, an amateur archaeologist from Waynesville, excavated at Tick Creek Cave, and his work resulted in the first major study of faunal remains from this region (Parmalee 1965).

By this time, more documentation of Archaic and Late Woodland sites had been gathered, but still little was known about Middle Woodland or Mississippian occupation of the area. Such a bias was to continue in the 1970s, when the implementation of federal legislation on historic preservation led to an increase in archaeological investigations.

In 1975 investigations began along a 20-km corridor in association with a highway project on Route 63. These included the first studies of the smaller tributaries and uplands of the central Gasconade drainage (McGrath 1977). Four of the open-air sites located in this survey were tested by Southwest Missouri State University between 1975 and 1977 (Cooley and Fuller 1977). In 1978 personnel from the University of Missouri at Columbia tested an additional eight sites (Reeder and Oman 1979). Smaller surveys also were conducted, such as those by Butler (1976), Cooley and Fuller (1975, 1976), and Turner and Helm (1979). Additionally, amateurs examined various caves and rockshelters (Jolly and Roberts 1974a, 1974b; Wessel 1974) and expanded some of the Route 63 excavations (Roberts 1978). These investigations also formed the basis of Reeder's (1988) dissertation, in which he argued that inhabitants of the Gasconade River basin were not isolated geographically from other groups and that the culture history of the area fits the general Midwestern cultural pattern.

Large-scale excavations also were conducted at two Late Woodland sites: the Feeler site, 23MS12 (Reeder 1982, 1988), and the Kimberlin site, 23CR301 (Geier 1975). The former project included the first paleoethnobotanical analysis for this section of the drainage (Voigt 1982) as well as the first soil-geomorphic study (Johnson 1982).

Previous Work in the Fort Leonard Wood Area

In the 1980s a series of major surveys was undertaken in the Mark Twain National Forest. Surveys were conducted outside the major valleys and, for the most part, identified small lithic scatters without diagnostic artifacts (Fraser et al. 1981; Klinger and Cande 1985; Perttula et al. 1982; Purrington 1985). The American Resources Group surveyed the 243-ha Kofahl Tract in 1981 (Fraser et al. 1981). Seventeen prehistoric sites, both open-air camps and lithic scatters, were identified. The sites are located on floodplain levees, terraces, alluvial fans, terminal ridge spurs, bluff crests, upland ridge crests, and hollow bottoms. Personnel from Southwest Missouri State University (Purrington 1985) surveyed an additional 1,215 ha and identified 15 limited activity areas, 12 "field camps," 6 cave/rockshelter sites, and 1 stone cairn. Most of these sites are located near large streams, but some are also present in the uplands. Purrington (1985) suggests that prehistoric site density was highest in the Rolla-Houston area of the forest and that this density is indicative of the real site-distribution pattern and not a result of sample bias.

Perttula et al. (1982) also conducted investigations in a series of tracts and found two small prehistoric sites, 23PU194 and 23PU195. Purrington (1983) also located two sites, 23PU198 and 23PU199, in another survey for the National Forest. Klinger and Cande (1985) surveyed 632 ha and located 10 small lithic scatters on ridge tops.

The 1970s also saw the first scientific investigations at Fort Leonard Wood. Garrison (1976) undertook a survey of a 16-ha tract for an air-to-ground weapons range, but no prehistoric sites were located. Purrington and Turner (1981) carried out a survey of a 34-ha landfill tract in an upland area. Two prehistoric lithic scatters, 23PU167 and 23PU168, were identified. Two surveys also were conducted by Major John Hargis (ca. 1980, ca. 1981) in 1980 and 1981. The first was located on Roubidoux Creek and the second in the Interior Uplands resource zone. He found 46 prehistoric sites, of which 13 are in the interior uplands. Due to changes in the boundaries of the military reservation, only 42 of these sites are currently located on the installation. The sites include caves/rockshelters, rock cairns, and villages or campsites.

In 1981 and 1982, Environment Consultants, Inc. examined scattered tracts across the installation, totaling 2,024 ha (Niquette et al. 1983). Identified and partially evaluated were 53 prehistoric and historic sites. The prehistoric sites include 15 caves or rockshelters, 25 open-air sites (including two with Dalton points), and 6 rock cairns. The historic sites are three late nineteenth/early twentieth century farms, a church from the same time period, and two military facilities (a bridge and generator). Twenty-five prehistoric sites and one historic site were thought to be eligible for listing in the NRHP. Another 68 prehistoric sites were identified but not evaluated, and no formal report on these sites was published. Based on review of the ASM forms for these sites, the Late Woodland period is best represented, but Middle and Late Archaic sites are also identified.

Niquette (1984) conducted a survey of an additional 1,035 ha, in which 22 prehistoric and 11 historic sites were identified. Again, Late Woodland sites predominated, although Late Archaic sites were also well-represented. In the same year, Niquette (1985) also investigated 243 ha of timber-sale tracts on steeply sloped terrain. This was considered to be an area with low potential for containing archaeological sites and, not surprisingly, only three isolated finds were recovered.

In 1988 the American Resources Group studied 46 separate survey areas in Pulaski County, totaling 974 ha (Moffat et al. 1989). They identified 33 archaeological sites, eight of which had been recorded previously. Twenty-seven of the sites are prehistoric, and they are mainly open-air camps and lithic scatters. Also recorded were five rockshelters, a rock cairn and a cave site. The six historic sites are late nineteenth/early twentieth century residences or farmsteads. Phase II evaluation was recommended for 25 sites. Also identified were 22 isolated finds. The survey results indicate a higher site density on Fort Leonard Wood than in the Mark Twain National Forest as a whole.

In 1990 and 1991, American Resources Group conducted further Phase I investigations of selected timber-sales and military-training areas on Fort Leonard Wood (McNerney 1992; McNerney and Neal 1992). One prehistoric and eight historic sites were documented during survey of 17 timber-sale parcels totaling 684 ha. Two military-ordnance training sites and four historic farmsteads were recommended for additional work (McNerney 1992). An additional 705 ha were surveyed in two timber-sale parcels and three training areas located in the Interior Uplands and Big Piney resource zones respectively.

Eight prehistoric isolated finds, one historic isolated find, nine isolated historic features, one historic farmstead, and two prehistoric sites were located. One prehistoric site and the historic farmstead were recommended for additional Phase II investigation (McNerney and Neal 1992).

In 1992, Markman and Associates conducted Phase I inventory of two large contiguous tracts of 972 ha and 1,943 ha. The larger survey documented 25 historic sites, 20 prehistoric sites and 24 prehistoric isolated finds. Phase II test excavation evaluation was recommended for four prehistoric open-air sites, and avoidance and preservation was recommended for two cairns and four rockshelters. Phase II evaluation was recommended for four historic sites, and one cemetery was recommended for avoidance and preservation (Markman and Baumann 1993). In the smaller survey, 12 historic farmsteads or residences were documented, and two sites were recommended for Phase II NRHP evaluation. No prehistoric sites were recorded (Baumann and Markman 1993). Under a subcontract with this project, Smith (1993) prepared an historic overview and research context for the Fort Leonard wood area to expand on the information provided by Harland Bartholomew and Associates (1992).

More recently, the University of Illinois conducted three Phase I survey projects at Fort Leonard Wood. The first project consisted of an inventory of 783 ha in scattered tracts. Forty-three new sites and 21 previously reported sites were documented (60 prehistoric, three historic, and one with both historic and prehistoric components). Phase II evaluation was recommended for 43 prehistoric sites, one historic site, and the single site with mixed components. Four cairns were recommended for listing in the NRHP, and Phase II evaluation was recommended for 20 cave/rockshelter sites and 21 open-air habitation sites (Ahler and McDowell 1993). The second survey of 1,613 ha was completed in 1995 (McGowan et al. 1996). Areas surveyed include upland tracts adjacent to the Big Piney River, west of Musgrave Hollow, and encompassing Hurd Hollow. A total of 57 prehistoric and historic sites and isolates was located, of which 15 were recommended as potentially eligible for listing in the NRHP. The third project entailed a survey of 4,000 acres in three different tracts. As a result, 21 new sites and four isolated finds were identified. Two prehistoric and two historic sites were recommended for Phase II evaluation (McGowan 1996).

Until recently Phase II investigations at Fort Leonard Wood have been few in number. The investigations conducted by Niquette et al. (1983) included test excavations at all reported sites. These excavations usually were limited to excavation of a single test unit, cleaning looter pit profiles and documenting the exposed stratigraphy, or occasional excavation of deep backhoe trenches. These activities were considered to constitute formal Phase II evaluation to assess NRHP eligibility, and NRHP nomination forms were completed for the 14 sites included in the proposed Roubidoux Creek Archaeological District.

Another Phase II investigation was conducted in 1992 by Markman (1993). These activities were limited to test excavations and damage assessment of Miller Cave (23PU2). Although the cave has been looted repeatedly, the excavations demonstrated that intact Early Archaic deposits were present and that the site should be nominated to the NRHP. The Miller Cave evaluation was the first Phase II work done at Fort Leonard Wood since the 1982–1983 work conducted by Niquette et al. (1983).

Phase II excavations were conducted at 15 sites during 1992 and 1993 (Ahler, Kreisa, McDowell, and McGowan 1995). The project was designed to sample different time periods, resource zones and

site types. Sites investigated include both open-air and rockshelters in the Interior Uplands, Big Piney and Roubidoux resource zones. Most importantly, this project produced a large suite of radiocarbon dates and paleoethnobotanical data. Based on the excavations, 10 of the 15 sites were recommended as eligible for the National Register of Historic Places.

During 1994 expanded fieldwork at 23PU235 was conducted as a Legacy project (Ahler, Kreisa, Theler et al. 1995). While additional work also was conducted at 23PU2 and 23PU255, most of the research effort centered on Sadie's Cave (23PU235). Work included the excavation of a number of test units, systematic coring of the cave area to identify intact deposits, and chemical and physical analyses of soil samples. The research identified intact Middle Archaic through Late Woodland period deposits. In addition, numerous charcoal samples were assayed and detailed faunal, floral and lithic analyses were conducted.

Most recently, National Register evaluations were conducted at seven sites during 1994 and 1995 (Kreisa 1995) and an additional eight sites in 1995 (Kreisa et al. 1996). As in the previous Phase II testing project, sites investigated during both projects included a number of different time periods, resource zones and site types. Included were open-air sites and rockshelters in the Big Piney and Upper Roubidoux resource zones. Geomorphological investigations were conducted as part of both projects at terrace, upland and rockshelter sites. Based on the excavations, five of seven (Kreisa 1995) and six of eight (Kreisa et al. 1996) sites respectively, were recommended as eligible for the NRHP.

Aside from strictly archaeological projects conducted at Fort Leonard Wood, two important ancillary projects have been completed recently: a GIS-based archaeological site predictive model (Ahler 1995) and a geomorphological study (Albertson et al. 1995). Using known site locations and associated physical attributes, Ahler (1995) has produced a GIS-based predictive models for cairn, cave/rockshelter and open-air sites. These models generally predict a high correlation between water sources and the presence of archaeological sites. The geomorphological study (Albertson et al. 1995) concentrated on floodplain setting within Fort Leonard Wood. One product of the project consists of a predictive model of site presence and depth of deposits on the several different terrace formations identified on base. Both studies provide important ancillary data on potential archaeological site distributions at Fort Leonard Wood.

CHAPTER 4.

PROJECT GOALS

The Phase I archaeological survey of Fort Leonard Wood described in this report was intended to achieve two separate but interrelated goals. The first goal is the inventory of cultural resources on selected tracts and the evaluation of those resources for potential NRHP eligibility. This goal is clearly specified in federal and Army regulations concerning the identification, protection and management of cultural resources. The methods used to accomplish this goal are presented in Chapter 5. The second goal is to contribute to the growing data base that can be used to address more substantive archaeological issues for the Northern Ozarks prehistory. This goal is also an important factor in determining NRHP significance and in contributing to archaeological understanding of this region. Research issues are presented here that take into account past research in the area and the limitations inherent in inventory-level data. The described research issues are not a comprehensive listing of the research potential of sites located at Fort Leonard Wood, and they cannot be resolved by a single inventory project, but they do provide focal points for examining the collected data. It is hoped that, over time, the cumulative data from ongoing inventory and testing projects will result in a significant advancement in our understanding of the Fort Leonard Wood area and Northern Ozarks region.

A series of research issues has been defined for Fort Leonard Wood by previous researchers and in the historic preservation plan prepared for the base (Ahler and McDowell 1993; Harland Bartholomew and Associates 1992; Kreisa 1995; Kreisa et al. 1996; Markman and Baumann 1993; Moffat et al. 1989; Niquette et al. 1983). These issues can be subsumed under four major topics of investigation: chronology, settlement patterns, subsistence, and technology. Examination of settlement patterns, with an emphasis on environmental parameters of site location, is best suited to archaeological survey data. The suite of physiographic information (i.e., aspect, distance to water, ecotone proximity, elevation, slope, site size) associated with each site location, along with the associated artifact assemblages, provides a foundation from which to compare and contrast sites. The observable patterns provide insight into cultural adaptations to the local environment. Changes in settlement patterns can then provide further insight into human adaptation in the project area. Under this theoretical framework, the data that archaeological survey often produces contribute to a number of wider research topics, albeit in an inferential manner. Conclusions based on survey data then can be used as a baseline model for additional testing and refinement by researchers in the future. A more specific discussion of potential prehistoric and historic period research is presented below.

Prehistoric Period Research

An underlying assumption of settlement-pattern research is that cultural groups adapt to their physical and social environment and that these adaptations may change through time with changes in environment and technology. In the Midwest, researchers have documented that changes in prehistoric settlement patterns reflect increased sedentism and increased reliance on cultigens through time. Past research at Fort Leonard Wood has focused on the role of environmental variability on prehistoric adaptations. Niquette et al. (1983) and Moffat et al. (1989), utilizing survey data, note that prehistoric sites of all types are more frequent within 1.6 km of permanent streams and that specialized sites tend to be further from permanent water sources. Ahler and McDowell (1993) found similar trends, but they refine the analysis by considering the cultural resource zones defined by Edging (1992). They found

most sites are within 500 m of a major stream valley and that site densities vary between resource zones. Site density is lowest in the Interior Uplands resource zone and highest in the Upper Roubidoux resource zone. More recent surveys indicate that distance to water and site density vary by specific parcel within and across cultural resource zones (McGowan 1996; Chapter 7, this report).

Fort Leonard Wood has been divided into five cultural resource zones for the purpose of modeling settlement patterns and human adaptation to different environmental conditions (Figure 5). The cultural resource zones are defined on the basis of contiguous aerial extent of selected subsistence resource zones, distribution of soil series and associations, bedrock geology, and the type and density of previously recorded cultural resources (Edging 1992). Five cultural resource zones have been defined: 1) the Cantonment zone; 2) the Interior Uplands zone; 3) the Big Piney zone; 4) the Upper Roubidoux zone; and 5) the Lower Roubidoux zone. The Cantonment and Interior Uplands cultural resource zones both include only the rolling to flat upland interfluvial subsistence resource zone located between the Big Piney and the Roubidoux valleys, while the other three cultural resource zones contain portions of stream valley, bluff slope and dissected upland subsistence resource zones. The cultural resource zones were designed with the assumption that there would be subtle but potentially important differences in the quality and quantity of subsistence resources within defined cultural resource zones. For example, the type and number of aquatic resources available in the Big Piney, upper Roubidoux Creek and lower Roubidoux Creek valleys are probably different, even though all of these would be included within the stream valley subsistence resource zone. One of the goals of the Fort Leonard Wood research program is to investigate potential differences in settlement and subsistence patterns among the various cultural resource zones.

In addition, it is expected that the physical setting at Fort Leonard Wood has not been static through time. Over time physical and cultural forces have operated in a dynamic system to create environmental change. Both major stream valleys, for instance, contain complex terrace systems and abandoned stream channels dating to the Pleistocene and Holocene epochs (Albertson et al. 1995). Geomorphic work at Fort Leonard Wood indicates at least seven superimposed terraces are present in the major stream valleys, and at least two terraces are definable in the minor tributaries valleys. The relationship of archaeological sites to these terraces and the paleolandscape offers a potential wealth of information on the nature of interaction between various cultural groups and their environment. Associated with the geomorphic changes in the environment are differing plant and animal communities, each offering a different resource base for the prehistoric and historic inhabitants and each of which is subject to change over time.

One aspect of understanding past cultures is the need to collect both cultural and environmental information in order to obtain a more complete picture of the past. In previous studies (Harland Bartholomew and Associates 1992; Moffat et al. 1989; Niquette 1984; 1985; Niquette et al. 1983) it was observed that locations more than 1.6 km from permanent streams have much lower site density than areas close to these watercourses. This general observation may hold for composite site distributions, but during time periods characterized by high group mobility (Paleoindian, Dalton, Early Archaic, and Historic), sites may be more equally distributed across the landscape. Specific expectations regarding site distributions and site density among resource zones can be expressed as follows. First, site density in the Interior Uplands zone is expected to be lower than in the other resource zones, located closer to the larger watercourses, regardless of time period. Second, historic period sites will

have the greatest site density in the Interior Uplands zone in comparison to all prehistoric time periods. Third, site distribution for Paleoindian, Dalton and Early Archaic periods is expected to show greater utilization of the Interior Uplands zone in comparison with all other prehistoric periods. Fourth, changes in site distribution along resource zone boundaries are expected to fluctuate based on environmental change, such as the Hypsithermal climatic interval, in comparison to current environmental conditions. And fifth, site distribution for more sedentary groups such as those of the Late Woodland period should be reflected by fewer, but larger sites.

A second topic of interest has been the examination of how the steep relief between upland and valley settings has affected settlement patterns and systems. The environment around Fort Leonard Wood is one of sharp contrasts. Deeply incised valleys and karst topography result in numerous microenvironmental changes over relatively short distances. Each culture had to balance its resource needs against risks and the need to expend energy to obtain various resources. The differences between valley sites and adjacent upland sites should characterize how each group balanced its needs. Specific expectations from known cultural differences can be examined. First, because of the importance of water access throughout prehistory, the overall prehistoric site density in major stream valleys should be greater than site density in upland settings. Second, because of a technological ability to obtain water from wells rather than streams, historic sites should demonstrate an equal or greater density in upland over valley settings. Third, the greater reliance on horticulture and aquatic resources in the Woodland period should be reflected in a greater density of Woodland sites in valley settings than in upland settings. And fourth, side valleys, because of their steep sides, tendency to flood and absence of terrace systems, would be expected to have lower site density values than major stream valleys for all time periods.

Numerous other questions can be formulated and examined, but an exhaustive list is impossible to create. The purpose here is to provide some direction to the analysis that is consistent with what other researchers have found noteworthy in the area (Ahler and McDowell 1993; Smith 1993). The information generated from these analyses can then be compared and contrasted with information from a wider area of Missouri and the Midwest in general. In summary, the goals of this project are to provide Fort Leonard Wood with cultural resource compliance data and to expand our knowledge of the local historic and prehistoric past.

Historic Period Research

Settlement-pattern research is not limited to prehistoric sites. Historic sites also can be examined through settlement-pattern analysis. As noted in the historic context, settlement in the Fort Leonard Wood area has been highly variable. Historical events such as the Civil War and the placement of railroad lines have strongly affected the location and distribution of historic sites. Smith (1993:116) postulates that inhabitants of the Fort Leonard Wood area followed a dispersed settlement pattern typical of the Upland South cultural tradition, which holds that settlers from the southeast arrived in the region with a unique culture derived from Scottish and Irish folkways that developed in the Appalachians. Both intersite and intrasite attributes of this culture have been summarized by Smith (1993:116-117), drawing from other research (Hart 1977; Journey and Moir 1987; Newton 1974; Otto and Anderson 1982; Sabo 1990; Smith et al. 1982; Weaver and Doster 1982; Zelinsky 1951). Intersite attributes of

this cultural tradition include: adaptation to woodland areas with good game resources but marginal agricultural land; placement of roads along ridges in hilly areas and in valleys in mountainous areas; settlement in a dispersed, kin-structured system; dispersed location of central-place or special-purpose facilities; development of a courthouse-town and county system; and placement of houses on high ground next to roads. The intrasite attributes of the Upland South tradition include: hilltop farmsteads with seemingly random placement of buildings; separate house and multifunction outbuildings; placement of the house to face normal approach patterns; shade trees around houses; and irregular placement of fields and pastures, often along topographic features.

Smith concedes that "[p]erhaps the patterns which are defined as characteristic of the Upland South are actually not linked to the Scotch-Irish and their migration, but rather, are typical of historic period low-income rural people, black, white and Native American" (1993:114-115). Smith (1993:118) also proposes that adaptation in the Fort Leonard Wood region would be influenced by the local landscape. The Upland South model deserves further historical and archaeological work to evaluate its efficacy. This may be facilitated by comparing the attributes of sites settled by southeasterners in this region with sites of comparable date and ethnicity throughout the Midwest. Another avenue of study may be the comparison of post-Civil War domestic sites located within Fort Leonard Wood that were inhabited by people from the southeast with sites inhabited by people from Illinois, Indiana or Ohio.

It is through archaeology that the hypotheses and models proposed by Smith may be tested. For instance, he indicates the earliest local settlements are expected along the river bottoms, with upland settlement increasing after the Civil War. More recent settlements were focused along the upland road system that ran along ridge tops, and prominent landscape locations became the preferred home locations. Smith also notes that the landscape changed significantly during the historic era and that the changes were associated with distinct occupational eras with different types of sites. It is expected that the number and diversity of site types increase from the nineteenth to the twentieth century. It is also expected that the earliest historic sites will be located in the valleys and that they will have a poor archaeological signature. Conversely, the most recent historic sites will tend to occur in the uplands, be oriented to the existing road system and will have a strong archaeological signature in historic records and on the ground surface. Historic sites encountered should be placed within the typology and model not only to support or disprove the hypotheses but to provide a framework from which these cultural resources might be managed.

Summary

The general goals of the project reported here are to fulfill the cultural resource management needs of Fort Leonard Wood and to build and expand upon the current understanding of the area's past. The research topics outlined above utilize physiographic and temporal variability to investigate the differential use of sites through time. Ultimately, the cumulative data should illustrate how both the prehistoric and historic populations in the Fort Leonard Wood area are similar to, or different than, other groups in the Midwest.

CHAPTER 5. METHODOLOGY

The Phase I archaeological site inventory of 3,500 acres at Fort Leonard Wood undertaken by the Public Service Archaeology Program of the University of Illinois at Urbana-Champaign consisted of archival research, systematic subsurface investigation of the three survey tracts, and analysis of artifacts and site attributes to determine the identified sites' potential for listing in the NRHP. The primary goal of this project was to inventory and document the location, age, condition, physiographic attributes, and potential significance of all prehistoric and historic cultural resources within the survey tracts and to recover material pertinent to significant regional research issues. This chapter describes the archival, field, laboratory, and analysis methods used in this project and the underlying substantive and theoretical orientation used to evaluate the potential of these sites for addressing questions important to the history and prehistory of the area.

Archival Research

Standard archival research was undertaken to develop a contextual framework of existing conditions within the survey tracts that would assist in data collection. Three areas were addressed. First, general environmental and cultural contexts were developed. Those contexts are presented as Chapters 2 and 3 of this report.

Second, specific soil conditions were evaluated for the selected survey tracts in order to identify appropriate field methods. Existing soil records were examined to develop a model of a typical soil profiles in various Fort Leonard Wood survey tract locations. This model provided a comparative profile from which to distinguish normal from atypical soil conditions and to determine the maximal depth needed for each subsurface test. An A-E-B soil horizon sequence, from top to bottom, represents a normal soil profile in upland nondepositional settings (United States Department of Agriculture, Soil Conservation Service [USDA, SCS] 1975). In depositional environments, where clay and organic matter may be added to and moved through the sediment profile in greater amounts than in upland settings, the soil horizon sequence is more variable. At Fort Leonard Wood, most upland soil profiles showed well-developed B horizons at less than 40 cm below surface, and posthole tests were considered complete at 40 cm or less in depth. Postholes tests in depositional environments often reached 1.0 m or more in depth, depending on the geomorphic model for the age of the terrace (Albertson et al. 1995). In addition, there are stable terrace settings where deeply buried (greater than 1 m) cultural materials are possible (Albertson et al. 1995). Solid core auger tube samples and screened bucket auger tests provide the basic sampling technique in these settings.

Third, available atlas, United States Geological Survey and plat maps were consulted to evaluate the potential for known historic sites in the survey areas. As part of this project, Fort Leonard Wood and USACERL furnished topographic and installation maps depicting the location of all known sites. Identified structures then were compared with historic documents identified by Smith (1993) in order to infer the type and nature of historic materials likely to be encountered in a survey area. Smith's research (1993:129) identified four classes and 25 types of sites that may be located within Fort Leonard Wood and their expected date range (Table 1). These background materials were used in the field evaluations of historic sites. Additional investigations were undertaken for all historic sites documented

Table 1. Classes and Types of Historic Archaeological Sites (adapted from Smith 1993:129).

<i>Site Class</i>	<i>Site Type</i>	<i>Date Range</i>
Agricultural	Hunter-Squatter	1815-1840
Agricultural	Subsistence	1820-1940
Agricultural	Pioneer	1820-1860
Agricultural	General	1870-1920+
Agricultural	Specialized	1890-1940
Agricultural	Share-Tenant	1870-1940
Agricultural	Renter	1870-1940
Agricultural	Rural Resident	1920-1940
Community Service Center	Mill	1820-1920
Community Service Center	General Store/Post Office	1830-1940
Community Service Center	School	1850-1940
Community Service Center	Church	1830-1940
Community Service Center	Cemetery	1830-1940
Community Service Center	Hamlet/Village	1830-1940
Special Activity	CCC Camp	1930-1940
Special Activity	Tie-Hacking/Log Slide	1820-1940
Special Activity	Civil War	1860-1865
Special Activity	Outlaw Camp	1830-1940
Special Activity	Still	1830-1940
Special Activity	Portable Sawmill	1910-1930
Special Activity	Trash Deposit	1815-1940
Transportation	Bridge	1870-1940
Transportation	Ferry/Ford	1820-1940
Transportation	Road	1820-1940
Transportation	Railroad tunnel	1850-1940

in the survey tracts to determine if site function or previous site ownership could be clearly identified. Located records were used in the evaluation of these historic sites. Detailed historic resource evaluations using chain-of-title materials and land-sale records were not undertaken as part of this research project.

Field Methods

The field methods used during the Phase I archaeological survey at Fort Leonard Wood were based on project goals and the USACERL Statement of Work. Surveyors worked at 20-m intervals across the survey tract. Two survey techniques were used. Upland locations with surface visibility greater than 30 percent were visually examined for cultural remains. If no cultural remains were located, no additional investigations were conducted. Where cultural materials were located, interval spacing was reduced to 5–10 m in order to increase the chances of locating diagnostic artifacts and better assess the condition of the location. In locations with surface visibility less than 30 percent and in all stream valley depositional settings, posthole tests were excavated in a 20-m grid pattern. A modification was made in areas with greater than 15-degree slopes. These areas were examined visually for benches, mounds, cairns, rockshelters, and caves and were not subject to systematic walkover or subsurface testing. All posthole tests were done with a scissors-type posthole digger. Each test was excavated in 10-cm levels, with all sediments screened through 6.35-mm mesh hardware cloth. These tests removed a 15–20-cm diameter column of soil. Tests were excavated to subsoil or bedrock, depending on the location on the landscape. All test locations were backfilled upon completion. Negative tests were counted, but their soil profiles were not recorded. Positive tests were recorded on standard forms that include soil color, soil texture and depth of cultural materials. Materials recovered from these tests, unless determined to be modern, were collected. Additional tests were placed around positive tests in order to determine probable site limits. The location, spacing and number of additional tests were based on field assessments of conditions. Site boundaries were determined on the basis of surface and subsurface findings and changes in landform.

Identification of a site resulted in additional documentation. Upon the discovery of an artifact or surface feature, the location was assigned a temporary field number (AOS or area of scatter). AOS numbers were assigned to all previously unrecorded sites. For newly identified sites, the first task was to define site limits and to record that location on USGS 7.5' quadrangle maps. All subsurface materials and representative surface materials discovered within the AOS were collected in reference to their specific provenience (e.g., surface or posthole test, depth of recovery). A scaled, field sketch map of the site was drawn. Maps include topographic or other natural features, man-made features, approximate site boundaries, and location of the site datum. All sites were marked with a permanent datum marker (a metal pipe) with a plastic cap engraved with "ILLINOIS PSAP DATUM". The field number was written on the cap in waterproof marker. The datum was placed in a location that was easy to reference and relocate within the site. Black-and-white photographs and color slides documenting each site were taken. Finally, field notes were recorded for each site. Specific observations made at each include a general location description, an evaluation of subsurface disturbance, documentation of features, and, if possible, temporal affiliation. Sufficient data was collected to complete ASM site forms and to provide preliminary NRHP evaluations.

Previously recorded sites were documented using their state trinomial designation. These sites were assessed to determine if changes had occurred since they were recorded. The same documentation procedures were undertaken as for newly recorded sites.

Laboratory Methods

All recovered materials were transported to laboratory facilities at the University of Illinois at Urbana-Champaign where they were washed, labeled, inventoried, analyzed, and prepared for curation. Inventory forms document artifact types, counts and weights for each provenience. All recovered materials were classified initially as historic or prehistoric artifacts. More detailed secondary analyses were performed on both historic and prehistoric materials.

Historic Artifacts

The historic artifacts category from Fort Leonard Wood contains artifacts dating to the nineteenth and twentieth centuries. Artifacts were initially sorted based on material types (e.g., ceramics, glass, metal, or lithics). Materials then were divided according to the classificatory system developed by South (1977). In this system, historic artifacts are organized at the most general level into artifact groups. South (1977) has defined nine such groups: Kitchen, Architecture, Furniture, Arms, Clothing, Personal, Tobacco Pipe, and Activities. Materials are then divided into artifact classes within the groups. Artifact classes are further subdivided into more specific Material, Ware and Type categories. These category attributes and descriptions generally facilitate identification of site age and function. Historic artifacts recovered in this project are from the Kitchen, Architectural and Activities groups.

The *Kitchen* group includes artifacts typically associated with food preparation and consumption. Within this group South (1977) has defined eight artifact classes: Ceramics, Wine Bottle, Case Bottle, Tumbler, Pharmaceutical Type Bottle, Glassware, Tableware, and Kitchenware.

The *Architectural* group includes those remains associated with construction and demolition of buildings rather than the activities performed in or near such structures. South (1977) defines five artifact classes for this group—Window Glass, Nails, Spikes, Construction Hardware, and Door Lock Parts. A class of Construction Materials has been added to incorporate remains such as concrete, brick, shingles, and mortar which often mark the former locations of historic buildings.

The *Activities* group encompasses a wide range of artifact classes that relate to the variety of activities performed by craft specialists as well as the general population and that are not included in other artifact groups. South (1977) defines 12 such classes: Construction Tools, Farm Tools, Toys, Fishing Gear, Stub-stemmed Pipes, Colono-Indian Pottery, Storage Items, Ethnobotanical, Stable and Barn, Miscellaneous Hardware, Other, and Military Objects.

Prehistoric Artifacts

All prehistoric material was counted and weighed, with the data entered on a preliminary inventory form (Appendix D). Lithics and ceramics were recovered in this project. The lithics are divided into

three broad categories: tools, manufacturing debris and miscellaneous lithic material. Tools include those made from both chipping techniques (e.g., projectile points and scrapers) and grinding and pecking techniques (e.g., celts and axes). Tools can be of formal manufacture, such as the examples listed above, or of incidental manufacture (e.g., hammerstones and pitted stones). Manufacturing debris usually is composed of the waste materials (e.g., spent cores, flakes and block shatter) generated from the production of chipped-stone tools. Miscellaneous lithic material includes fire-cracked rock, limestone, unmodified and tested chert chunks and nodules, and other. Fire-cracked rock is unintentionally produced debris that results from alternating processes of heating and cooling (Taggart 1981; Zurel 1979, 1982). Unmodified or minimally flakes chunks and nodules of chert represent raw material collected and reserved for tool production. Chipped-stone tools, manufacturing debris and ground-stone tools were recovered from this project.

Debitage (flaking debris) categories comprise a majority of all the chipped-stone remains. These categories include block shatter, broken flakes and whole flakes. The whole flake classification was used for items characterized by the presence of a bulb of percussion on the ventral surface and a striking platform. The whole flakes were further divided into primary, secondary and tertiary flake types based on the amount of visible cortex present: ≥ 50 percent, < 50 percent and > 0 percent, and 0 percent respectively. Secondary characteristics also were assessed. Primary flakes tend to have a pronounced bulb of percussion, secondary flakes have a less pronounced bulb, and tertiary flakes are generally smaller than the other two flake types and often have a reduced or no bulb of percussion. Broken flakes are debris items that lack a platform or bulb of percussion, or are too small to place accurately within the whole flake category. Block shatter has irregular shapes that lack flake and core characteristics. Bifacial thinning flakes have a distinct lip on their bulb of percussion, have an angled striking platform and have distinctive negative flake scars on their dorsal surface. Related todebitage are cores, the parent stones from which flakes are removed.

Formally flaked stone tools initially were divided into unifacial and bifacial categories. Unifaces show evidence for retouch only on one surface. Bifaces demonstrate retouch on both their dorsal and ventral surfaces. When possible, each tool is assigned to a more detailed morphological-functional use category. Unifaces are most commonly classified as scrapers, with the particular type determined by the placement of the edge modification. Bifaces can be placed into a number of distinct categories. Among these are such items as projectile points, drills, knives, scrapers, and thick and thin bifaces. The most recognizable of the chipped-stone tools are projectile points. Projectile points are symmetrically thinned bifaces that show evidence of hafting. These items have been examined in detail for comparison with projectile point types known from the Midwest and are particularly important for the placement of sites within a cultural and temporal context (see Bell 1958, 1960; Chapman 1975, 1980; Justice 1987; Kay 1980; McMillan 1965; May 1982; Morrow 1984; Perino 1968, 1971).

The other tool types are largely descriptive in nature. Perforators are typically small, narrow, often bifacial tools. Knives are larger, thin bifaces with a low edge angle to facilitate cutting while scrapers have a higher edge angle to facilitate scraping. Thick and thin bifaces are not finished tools but represent stages in tool manufacture. A thick biface is one that has been modified, is not a finished implement, and is in need of further modification. Typically, the thick biface can be modified into a number of different tool types (Bradley 1975). Thin bifaces are the result of further modification of thick bifaces. They also are not finished implements, but their morphology indicates that they can be

further modified into only a single tool category (Bradley 1975). Thin and thick bifaces were differentiated based on flake morphology.

In analyzing the chipped-stone tools and lithic debris, both core-reduction and bipolar models were followed (Collins 1975; see also Bradley 1975; Hayden 1980). Collins (1975) defines five stages of chipped-stone manufacture and use for the core-reduction model. These stages consist of acquisition of raw materials, core preparation-initial reduction, primary trimming, secondary trimming, and use-maintenance-modification. Each of these categories, called activity sets (except for raw material acquisition), is associated with waste by-products and objects that are further used or modified. Core preparation-initial reduction is a stage in which the core is shaped and flakes are detached. Suitable flakes may be retained and further used with the core being discarded, or both can be retained for additional modification. End products of this stage are primary flakes, block shatter, discarded cores, and thick bifaces. The next stage, primary trimming, is used to shape the object. Flakes can be retouched into usable tools, or thick bifaces can be flaked into a thin biface. These activities result in the production of secondary flakes, retouched flakes, thin bifaces, and items broken during manufacture. Following primary trimming is the secondary trimming of thin bifaces. This stage produces tertiary flakes, finished tools and items broken during processing. Finally, the tools are used, maintained and perhaps modified. Bifacial thinning flakes are the most important waste by-product of tool maintenance activities, although they also could be produced while thinning thick bifaces.

Following this model, the following considerations have been made in the analysis of lithics. Cores, primary flakes and block shatter are classified as evidence of initial-stage reduction activities. Secondary flakes, tertiary flakes, and thick and thin bifaces evidence later-stage reduction activities. Bifacial thinning flakes are indicative of tool-maintenance activities. Since broken flakes can be produced by a number of prehistoric and modern processes, they were not considered when characterizing the lithic tool production activities at the site.

Less common at Fort Leonard Wood is the use of a bipolar technique. In this technique, small cobbles are generally not well-suited for use in the direct hammer or core reduction technique described above, although a bipolar technique can be used to manipulate these items. When using a bipolar technique, the cobble is placed on an anvil and struck. This action yields bipolar debris and, eventually, a spent core. The flakes can either be discarded, used as-is, or further modified into tools. The bipolar technique also produces pitting in anvil stones due to the striking force used.

The other class of lithic artifacts, ground-stone tools, consists of pecked and ground items generally made from metamorphic or igneous rock. Included in this category are items that are intentionally formed, such as celts and axes, and unintentionally formed, such as hammerstones, grinding stones and pitted stones. Intentionally formed artifacts consists of items that were modified for a specific use. Unintentionally formed items have areas of pitting, battering, or smoothing that were caused through use. Definitions of the individual artifact categories are based on those used by other research in the Midwest (e.g., Brose 1970; McElrath 1986; McGimsey and Conner 1985, among others).

Additional data also was gathered from prehistoric ceramics. Data collected for each rim or body sherd includes temper type, temper density and size, surface treatment, cord twist, and decoration, thickness, and vessel portion. For rim sherds, additional collected data include vessel form, rim shape,

and lip shape and treatment, following standard definitions for these attributes (Rice 1987; Shepard 1965). Vessel profile definitions and terms following Ozuk (1990) were used in an attempt to standardize terminology. When possible, each sherd is assigned to a ceramic type for chronological purposes that follow previously described Maramec types defined in central Missouri (e.g., Marshall 1958; McMillan 1965).

Site Forms

After analysis of the materials was completed, ASM site forms were compiled for all newly identified sites. Updated site forms also were compiled for previously reported sites documented during this survey. The completed site forms are included in Appendix C. Because site location data are confidential, this appendix is bound and distributed separately from the main report.

The site definition established for this project in the Statement of Work is "any loci where human behavior has resulted in the deposition of at least three artifacts within a 20 meter diameter area and is at least fifty (50) years of age. Less than three artifacts within the 20 meter diameter will be considered isolated finds". The specification of site definition is critical to all inventory projects because site definitions are widely variable from one state to another and among researchers. Zeidler (1995:36) has noted that "one of the most fundamental and firmly entrenched concepts in modern archaeological research is that of the 'site,' yet paradoxically it is currently one of the most contentious and variably defined concepts in the discipline." Locations meeting the Fort Leonard Wood minimum criteria are identified as sites; locations below the minimum site threshold are isolated finds. NRHP evaluations are provided for sites and isolated finds. The isolated find designation is not considered a de facto evaluation of NRHP ineligibility. This approach is designed to help protect cultural resources by recognizing that special conditions may exist where the minimum criteria is not achieved, but nonetheless the potential significance is high. Nonetheless, none of the isolated finds identified during this survey has been recommended as potentially eligible for the NRHP. In this project, site boundaries have been defined to include the entire area encompassed by a discrete scatter of artifacts and to take into account topographic features.

NRHP Evaluations

The collected data were then evaluated to determine which sites meet the eligibility criteria established for the National Register. The least subjective criterion for evaluating a site is integrity (Townsend 1995). Phase I field data provide substantive evidence regarding site integrity. Evaluation of known soil data, historical records, surface evidence, and soil stratigraphy provide a basis for determining site integrity. Based on a lack of integrity, sites can be recommended as ineligible for the National Register (National Register Bulletin 1991:48-49). Additional Phase I-level data that contribute to site evaluation include site size, assemblage diversity, chronological placement, and size of the site assemblage. While these measures alone do not provide justification for a recommendation of ineligibility or potential eligibility, each can support such a recommendation. Specifically, when data are limited, or lack stratigraphic integrity, it is less likely that substantive research questions can be addressed (Butler 1987:824-825; National Register Bulletin 1991:48-49). Limited data and a lack of

integrity weigh against NRHP eligibility. Therefore, it is possible to make informed NRHP recommendations solely on the basis of Phase I investigations. To a large degree, the recommendation of ineligibility for sites recorded in this project is based on a lack of subsurface integrity, as seen in posthole tests and in erosional cuts within the site limits, and limited material evidence to document the nature of the cultural occupation.

Phase I investigations, however, are generally not adequate to demonstrate NRHP eligibility for sites. Field methods designed to locate sites lack the intensity of data collection needed to document fully the nature of cultural occupation at any given site. Rarely is enough evidence collected to recommend a determination of site eligibility. Instead the sites are evaluated as indeterminate or potentially eligible for the NRHP, and Phase II investigations are recommended to determine NRHP eligibility (Jameson et al. 1990:6). As part of this recommendation, the data necessary resolve the site's NRHP status are identified. The recommended Phase II investigations examine site preservation, site function, chronological placement, and the potential to address significant research issues.

Curation

All cultural material recovered from this project and all documents relating to the fieldwork and laboratory analysis of these materials are the property of the federal government. University of Illinois personnel have compiled lists of the artifacts recovered from each site (Appendix A). In addition, copies of all photographs, analysis forms and field forms pertaining to these sites are included in Appendices D and E. Interested researchers should contact USACERL regarding access to the collection and documentation.

CHAPTER 6.

SITE INVENTORY AND ARTIFACT ANALYSIS

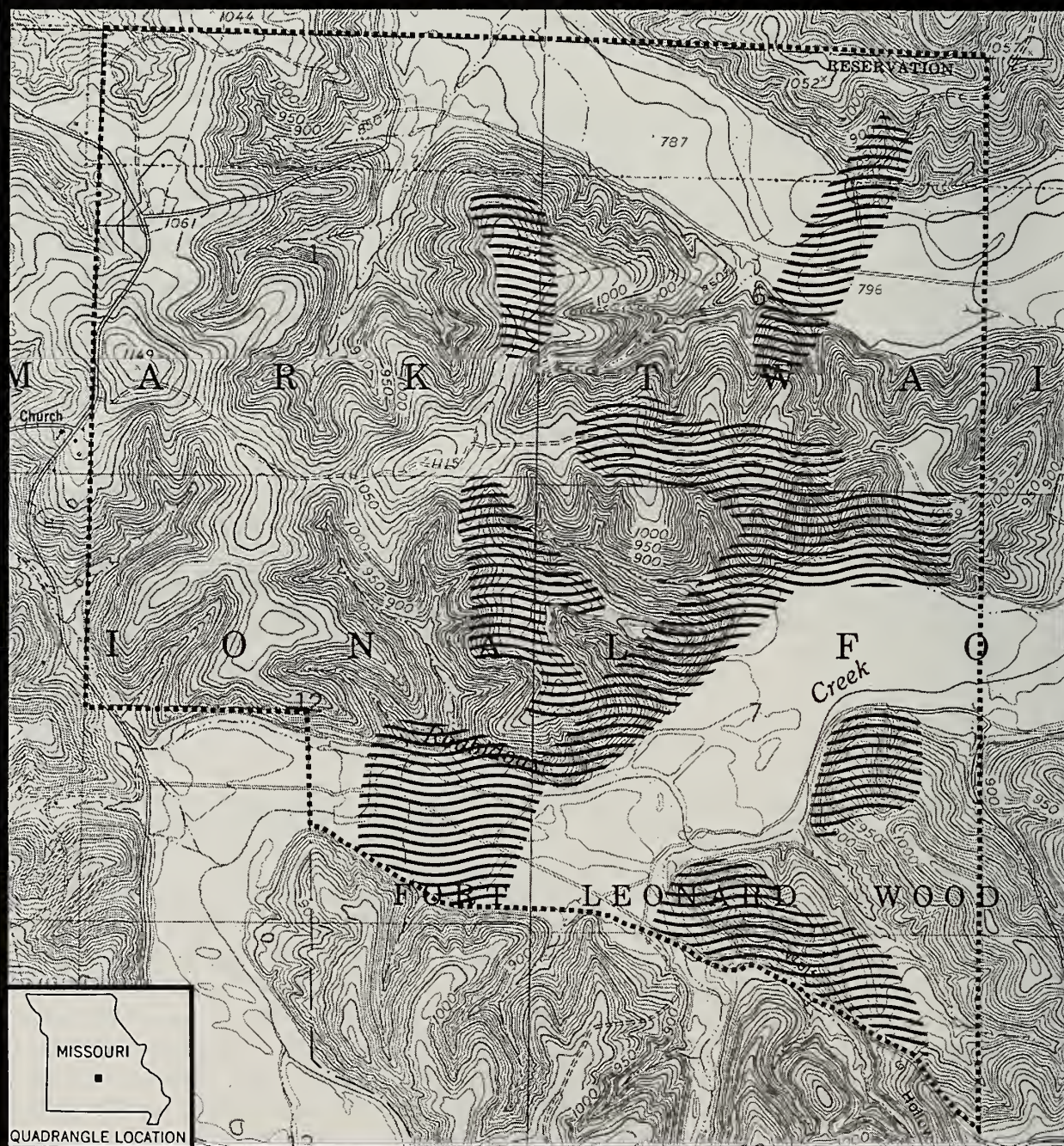
Three survey tracts, located in different parts of the base, were examined during the course of project fieldwork (Figure 2). The Northern USFS Joint Use Land Tract is largest, consisting of 1,968 acres (796.4 ha). The McCann Cemetery Tract is smallest at 650 acres (263.1 ha) in size. The Quarry Timber Sale Tract consists of four separate parcels totaling 882 acres (356.9 ha). At the end of the project, 49 previously unreported sites and isolated finds had been identified; the reported locations of 28 previously recorded sites were revisited as well. Four of these sites were not relocated and are either destroyed or were mislocated when originally defined (23PU225, 23PU278b, 23PU285, 23PU550). This chapter presents the results of the survey, including site descriptions, artifact inventories and analyses, and National Register recommendations for each site and isolated find identified in the project area. The site and isolated find descriptions are organized by survey tract. Sites are described first, in order of ASM site number, and are followed by isolated finds.

Pertinent attribute information is presented for each identified site and isolated find as well. Some of this data is presented as a short synopsis preceding the general discussion of each site. Data presented in this format include site number, the USGS quadrangle on which the site is located, elevation (in meters), site type (following ASM definitions), soil type, temporal component(s), and NRHP recommendation. Following the synopsis is a narrative description of the site's location, the basis for the definition of the site area, surface visibility in the site area, a brief discussion of artifacts and cultural features identified (if present), and the rationale for the NRHP recommendation. Also presented is a sketch map of each site and isolated find. Temporally diagnostic prehistoric artifacts are illustrated as well. Detailed inventories of artifacts, including provenience, count, and weight, are presented in Appendix A.

Northern USFS Joint Use Land Tract

This tract, comprising 1,968 acres (796.4 ha), is located in the northwest part of Fort Leonard Wood and is jointly managed with the Mark Twain National Forest (Figure 7). The tract lies entirely in the Lower Roubidoux cultural resource zone and is composed almost equally of floodplain and upland environmental settings. Large areas of the floodplain of Roubidoux Creek are present in both the southern and northern portions of the survey tracts. Between the two is a large, highly dissected, upland ridge. Roubidoux Creek defines the large upland ridge to the north and south as well. Only a few gravel and paved roads cross the tract. The tract is bounded on the south by the Roubidoux Creek valley and Wolf Hollow, on the west and north by installation boundaries, and on the east by the east edges of sections 6, 7 and 18 of Township 35 North, Range 11 West. Numerous small areas that had been surveyed previously were not included in the current investigations. Thirteen sites had been defined previously in this tract, and all but three were relocated. Newly identified are nine prehistoric sites, two historic sites and seven prehistoric isolated finds.

WAYNESVILLE QUADRANGLE
MISSOURI
7.5 MINUTE SERIES (TOPOGRAPHIC)



KEY:

..... Survey Limits

≡ Excluded from Survey

1 .5 0 1 KILOMETER

Figure 7. Location of the Northern USFS Joint Use Land Tract.

Site Number: 23PU151, Kerr Cave (95-45: AOS 106)

USGS Quadrangle: Waynesville 7.5'

Elevation: 259 m asl

Site Type: Cave

Soil Type: Gepp-Bardley-Clarksville very cherty silt loams, 14-35 percent slopes

Component(s): Late Woodland

Recommendation: Potentially Eligible

Site 23PU151, known as Kerr Cave, is a north-facing cave located in the bluff face above Roubidoux Creek (Figure B1). It was originally reported by Fowke (1922), who did not find evidence of human occupation. The site was officially recorded with the ASM in 1960. It was revisited in 1982 (Niquette et al. 1983:234-237), when it was noted that 60 percent of the surface was damaged by pothunting and water abrasion. Usable living space was estimated at 850 m². Soil profiles indicated that an intact subsurface midden (more than 40 cm thick) was present. Faunal remains, lithics and ceramics were recovered from the surface and profiles. The ceramics, a Type 38 projectile point and a Type 39/Bonham projectile point, indicate that the site dates to the Late Woodland period. Niquette et al. (1983:237) concluded that the assemblage represented a number of cultural activities, including hunting, collecting, animal and plant processing, wood, bone and leather working, pottery manufacture, storage, and cooking. Given the nature of the faunal assemblage, spring and summer occupation was indicated. He also suggested that 23PU151 was associated with two other nearby sites, 23PU224 and 23PU225. 23PU224 is a disturbed cairn located on the bluff above 23PU151, and 23PU225 is a habitation site located on the floodplain of Roubidoux Creek (see descriptions below).

The site was revisited during the current survey project (Figure 8). Vegetation outside the cave consists of oak-hickory forest, with some grass growing on the talus. The mouth of this cave is approximately 30 m wide and 10-12 m high. The rear wall is about 10 m back. The floor of the cave is relatively level, sloping gradually downward toward the mouth from the back wall. A small passageway, roughly 2-x-2 m in size, extends into the bluff from the southeast corner of the main cave. This passageway appears to continue deep into the bluff, but examination revealed no artifacts for a distance of 75 to 100 m into the passageway. One large rock with a possible "vulvar" petroglyph is located along the eastern wall, near the cave mouth. Disturbance from looting was noted along the western edge of the main portion of the cave, and a number of the artifacts discussed below were found adjacent to this looted area. Additional episodes of looting may have occurred since this site was initially reported in 1982, but the site does not appear to have suffered a significant degree of disturbance since it was documented by Niquette et al. (1983).

A representative sample of lithic debris and ceramics was collected from the surface of the main chamber. No posthole tests were excavated in the cave. The lithics (n=31) consist of two primary flakes, nine secondary flakes (one utilized), nine tertiary flakes (one utilized), one bifacial thinning flake, four broken flakes, two blades, two pieces of block shatter, one bipolar flake, and one mano. The ceramics (n=26) consist of 22 limestone-tempered Maramec Cordmarked sherds, two limestone-tempered Maramec Plain sherds, one limestone-tempered smoothed-over cordmarked sherd, and one eroded limestone-tempered sherd. Cordage twists could be identified on 19 of the 22 cordmarked sherds recovered. Of these, 16 have S-twists while 3 have Z-twists. This may indicate that the site

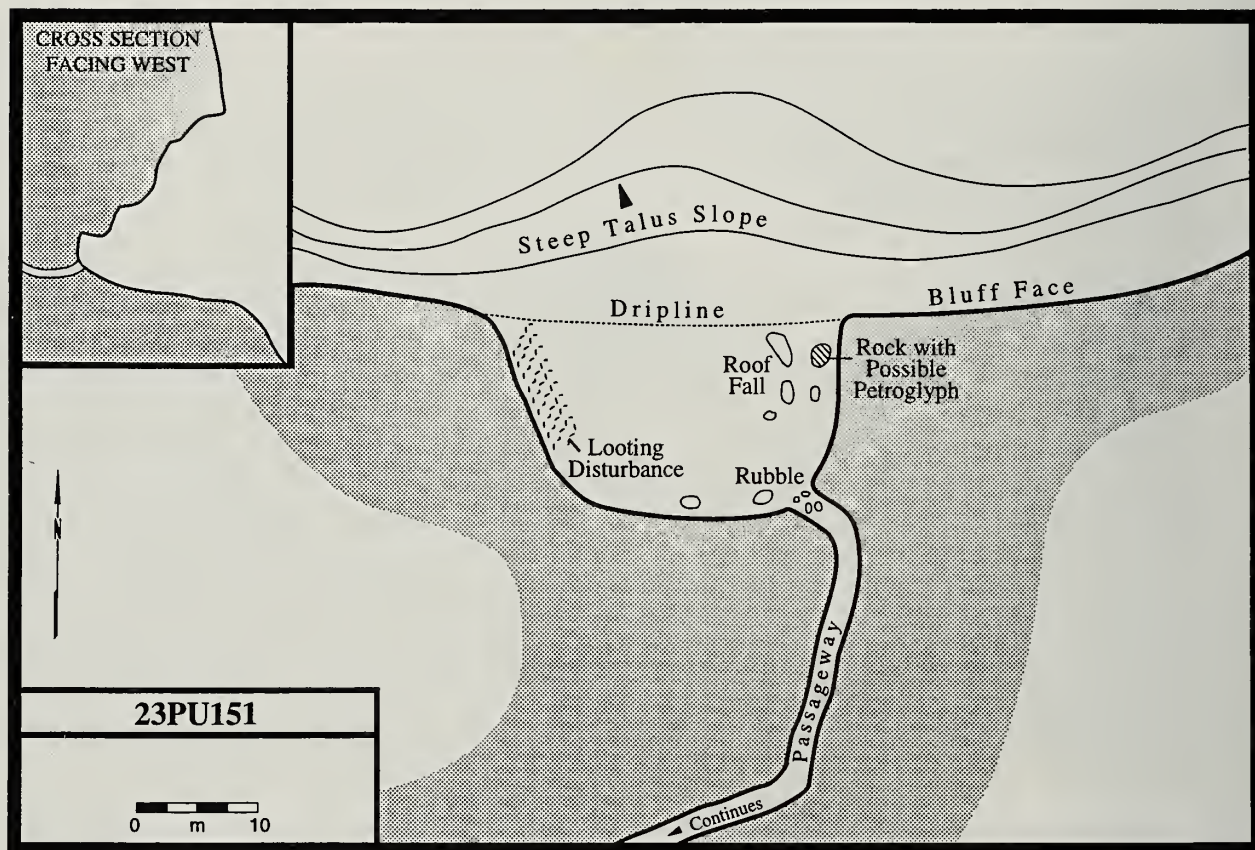


Figure 8. Sketch Map of 23PU151.

dates to the early segment of the Maramec Spring phase (Kreisa et al. 1996). Four pieces of mussel shell also were collected.

The previous investigations at this site included only surface collection and cleaning of exposed profiles. The profiles suggest, but do not confirm, that intact deposits are present. Similarly, it is not clear if any of the collected artifacts were associated with the potentially intact deposits. Additional data recovery is recommended prior to making a formal determination of eligibility for this site.

Site Number: 23PU162 (95-45: AOS 114)

USGS Quadrangle: Waynesville 7.5'

Elevation: 248 m asl

Site Type: Lithic Debris Scatter

Soil Type: Claiborne silt loam, 5-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Potentially Eligible

23PU162 was recorded originally with the ASM in 1979 by personnel from Southwest Missouri State University. One biface fragment was found on the south side of a recently constructed roadbed, 30 m west of an intermittent stream gully. The site was recorded as an isolated find. The current survey indicates that this isolate is actually part of a larger site.

A lithic debris scatter was identified by University of Illinois personnel on the western portion of the T7 terrace/fan complex that is located on a pronounced northward bend in the Roubidoux Creek valley (Figure B1). The roughly oval site covers an area approximately 190 m north-south by 65 m east-west between the gully that bisects this landform and a smaller ravine to the west (Figure 9). This ravine parallels a north-trending gravel road that exits the base property. The gully on the east of the site area drains the uplands south of the site location. The southern limit of the site is the east-west gravel road that parallels the southern bluff line. The site is within plantation pines with poor surface visibility. Given the proximity of 23PU162 to the debris scatter designated in the field as 95-45: AOS 114 and their presence on the same landform, it seems appropriate that the newly defined lithic debris scatter be reported as an update, and enlargement, of 23PU162 rather than as a new, separate site location.

A total of 34 positive posthole tests was excavated within the expanded boundaries of 23PU162. Lithic debris was recovered to 50 cm below ground surface in some instances (Table 2). Recovered artifacts consist of seven cores, three primary flakes, four secondary flakes, 45 tertiary flakes, one bifacial thinning flake, eight bipolar flakes, five blades, 144 broken flakes, 24 pieces of block shatter, one unifacial retouched flake, and one possible mano. Soil profiles indicate a brown silt loam Ap horizon extending to between 15 and 25 cm below surface, underlain in places by a very pale brown E horizon or transitional EB/BE horizon in places. The E horizon, where present, is 20 cm thick. The transitional EB/BE sediments, where found, are approximately 10 cm thick. The underlying B horizon is a yellowish brown silt loam and is present between 30 and 35 cm below surface. Gravel is common throughout the profiles, although it is not as abundant as it is in the adjacent T5 terrace to the east and north.

23PU162 contains a relatively intact (20-cm thick or more), E horizon from which at least 19 artifacts, and possibly more, were recovered. Given the integrity of the soil horizon, the recovery of artifacts to 50 cm below surface in certain instances, and the number of artifacts found, additional investigations are recommended to determine if the site is eligible for listing in the NRHP. Phase II investigations should include determination of site boundaries, topographic mapping of the site, determination of whether intact features are present by means of test unit excavations, recovery of temporally and functionally diagnostic artifacts, and recovery of environmental data from floral and faunal remains (if possible).

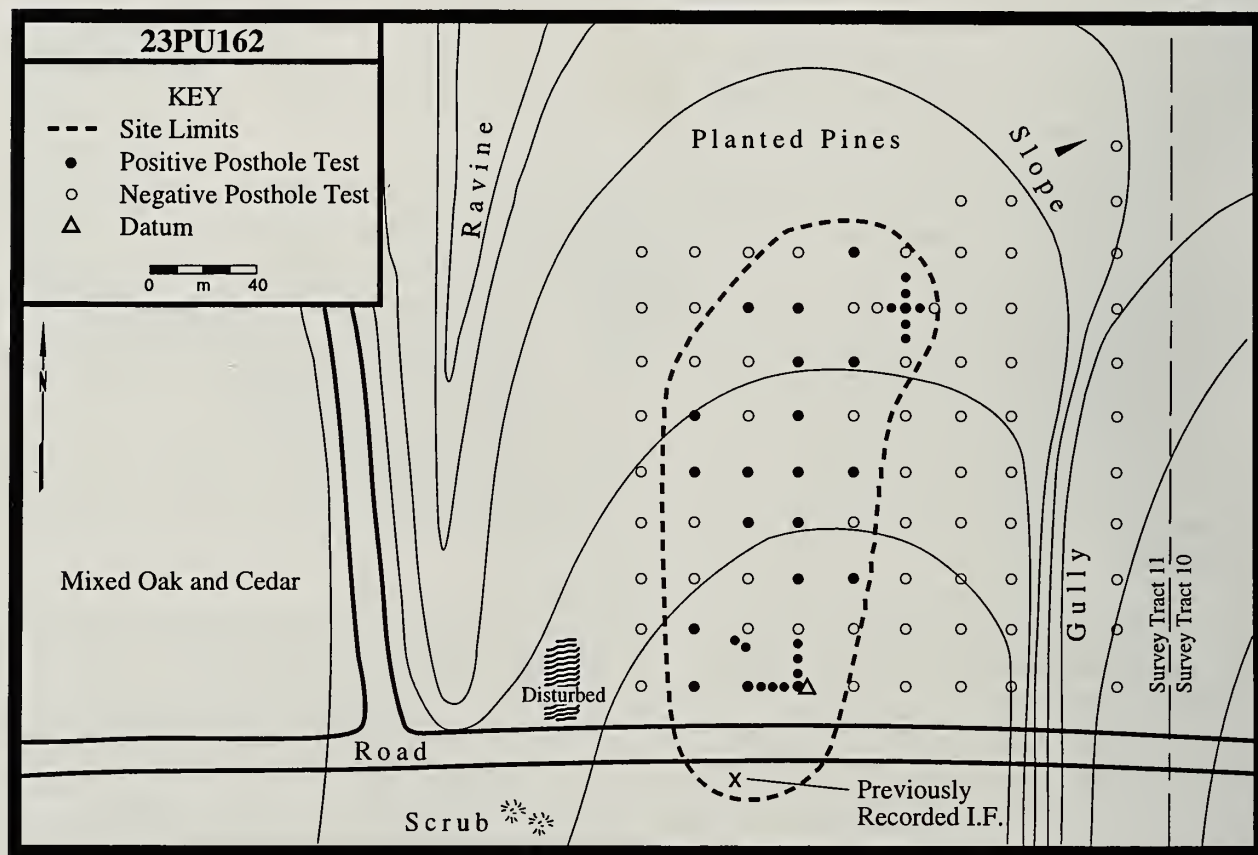


Figure 9. Sketch Map of 23PU162.

Table 2. Distribution of Artifacts Collected from 23PU162.

<i>Soil Horizon</i>	<i>Depth of Artifacts</i>	<i>Number of Artifacts</i>
Ap	varies	90
Ap or E	varies	125
E/BE	varies	19
Uncertain	varies	9

Site Number: 23PU223
USGS Quadrangle: Waynesville
Elevation: 280 m asl
Site Type: Rockshelter
Soil Type: Gepp-Rock outcrop complex, 35–60 percent slopes
Component(s): Archaic
Recommendation: Not Eligible

This site was recorded with the ASM in 1982. It consists of two adjacent rockshelters located in a bluff above Roubidoux Creek, which flows 50 m to the south (Figure B1). At the time of identification, vegetation in the surrounding area consisted of oak-hickory forest. Overall, the size measures 4 m north-south by 9 m east-west. According to information on the ASM site form, lithic debris, two Archaic period projectile points and faunal remains were collected. Both rockshelters were heavily damaged by pothunting. The ASM site forms indicates that cultural deposits at both shelters had been completely destroyed, although the Forest Service site form states that the smaller of the two shelters was less heavily damaged.

The site was revisited during the current survey (Figure 10). It appears to be on base but is located very close to the boundary of Fort Leonard Wood. Formal determination of ownership should be undertaken by base personnel. Oak-hickory forest covers the terrace to the south, and vegetation near the shelters consists of sparse grass. Surface visibility ranged from 25 to 100 percent. The shelters are very shallow, appearing more to be protected overhangs. No artifacts were present on the surface, and a large looter's pit was noted in the eastern shelter. The pit is 30–40 cm deep, and a spoil pile is located next to it. Given the degree of disturbance, it is unlikely that intact cultural deposits are present. The site is recommended as ineligible for listing in the NRHP, and no further work is recommended.

Site Number: 23PU224, Kerr Cairn (95–45: AOS 107)
USGS Quadrangle: Waynesville 7.5'
Elevation: 274 m asl
Site Type: Cairn
Soil Type: Gepp-Bardley-Clarksville very cherty silt loams, 14–35 percent slopes
Component(s): Late Woodland
Recommendation: Potentially Eligible

Site 23PU224, also known as Kerr Cairn, is a limestone-block cairn located directly above 23PU151 on a ridge overlooking Roubidoux Creek (Figure B1). The site was identified originally by Niquette et al. (1983:360–362) in a relict prairie with cedar trees. The cairn was described as made of dolostone and soil and measuring approximately 8 m in diameter. Niquette et al. (1983) noted evidence of looting, especially near the center of the cairn, that impacted 20 percent of the cairn. Disturbance to human remains was documented, and five secondary and tertiary flakes (one utilized) were recovered.

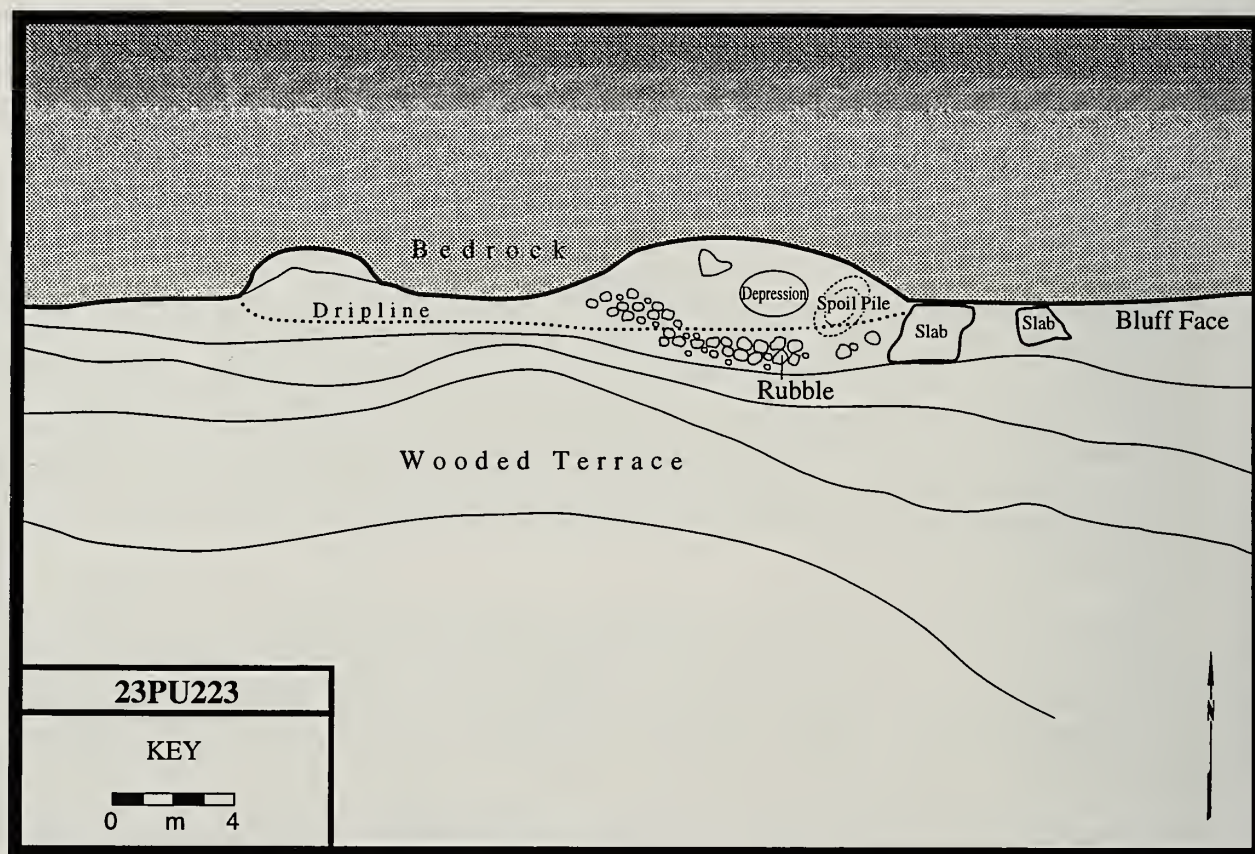


Figure 10. Sketch Map of 23PU223.

At the time of the University of Illinois survey, the dimensions of the cairn were the same as previously reported (Figure 11). Presently, the cairn is less than 50 cm in height. Vegetation still consists of grasses and cedars with a few small dogwoods; surface visibility in the area is less than 25 percent. Roubidoux Creek is located 640 m to the north. No artifacts or human remains were noted on or near the surface of the cairn, and posthole tests excavated away from the cairn were negative. It does not appear that the site has suffered from additional disturbance since it was reported in 1982. A large pothole was noted in the western quadrant of the cairn, which corresponds to the disturbance noted by Niquette et al. (1983).

The position of this cairn at the edge of a ridge overlooking a major drainage is consistent with the locations of other cairns in this area and at Fort Leonard Wood in particular, including 23PU212, 23PU215, 23PU219, 23PU221, and 23PU222 (Niquette et al. 1983); 23PU234, 23PU311, 23PU213, 23PU313, and 23PU321 (Niquette 1984); 23PU553 (McGowan et al. 1996); and 23PU624 (McGowan 1996). For this reason it is assigned to the Late Woodland period.

Niquette et al. (1983) indicate the site should be eligible for the NRHP. We suggest that a systematic approach to determining the eligibility of cairns be developed. This subject is discussed in

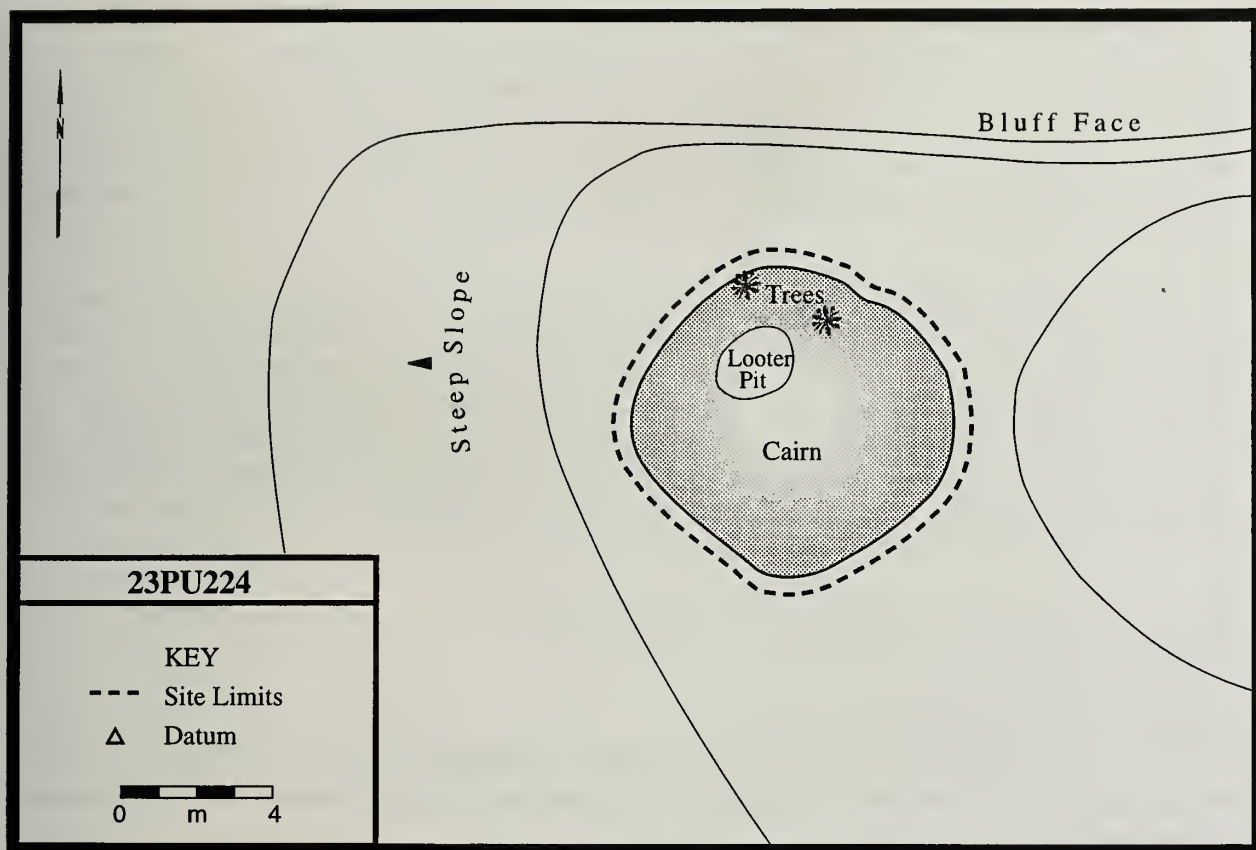


Figure 11. Sketch Map of 23PU224.

greater detail in Chapter 8, but includes the creation of a context to be used for the evaluation of all such sites within the NRHP format of a multiple property listing, the review of previous work at specific cairn sites, and determination of the fieldwork required to complete the needed documentation at specific cairn sites. Minimally, such documentation at 23PU224 should include a review of previous fieldwork and the creation of a detailed site plan and topographic map. Once completed, the site should be formally nominated for the NRHP, preferably as part of a multiple property listing nomination.

Site Number: 23PU225

USGS Quadrangle: Waynesville 7.5'

Elevation: 245 m asl

Site Type: Habitation-Prehistoric

Soil Type: Nolin silt loam and Kickapoo fine sandy loam, 0–3 percent slopes

Component(s): Middle Archaic

Recommendation: Not Eligible

This site was reported to the ASM in 1982 as a large open-air site on the floodplain of Roubidoux Creek (Figure B1). The site is located near 23PU151 in a cultivated area. A complete surface collection was made at the time, consisting of 38 flakes, two projectile point, one core, and one pitted stone. One projectile point was nondiagnostic, but the other is described on the ASM site form as a Middle Archaic point, although no illustration or type name is included. The site was recorded as 210,000 m² in size but completely destroyed by earthmoving activities. No sketch map was provided with the original site form.

23PU225 was revisited during the current investigations. No material was identified on the surface, and posthole tests in the site area were negative. Since there was no evidence of a site, no sketch map was prepared. To verify that the site had been destroyed, a second intensive survey was conducted. Vegetation at the time consisted of tall grasses, weeds, briars, and scrubby trees. There was no surface visibility. Examination of backhoe trenches in the site area indicate that alluvial gravels and clays are present at the surface. It appears that the site has been completely destroyed and is therefore not eligible for listing in the NRHP. No further investigations are recommended.

Site Number: 23PU231 (95-45: AOS 123 and AOS 124)

USGS Quadrangle: Waynesville 7.5'

Elevation: 320 m asl

Site Type: Lithic Tool and Debris Scatter

Soil Type: Doniphan very cherty silt loam, 3-9 percent slopes

Component(s): Early and Middle Archaic, Late Woodland

Recommendation: Unevaluated

This site was identified originally by Niquette (1984:108-112), who described it as located on an upland ridge in an oak forest, 400 m north of an unnamed intermittent drainage of Roubidoux Creek (Figure B1). A dirt road ran through the site. Shovel tests were excavated at 20-m intervals, with site boundaries defined as 50 to 75 m north-south and 1,750 m east-west. At that time, disturbance due to bulldozing, logging, off-road vehicles, and road construction and maintenance was noted; approximately 70 percent of the site had been disturbed. A total surface collection was made of artifacts on the dirt road, and three test units were excavated, although no discussion of the soil characteristics is provided in the original report. Artifacts recovered include biface fragments, flakes and fire-cracked rock. Three temporally diagnostic artifacts were found—one Graham Cave Side Notched projectile point, one Rice Side Notched projectile point and one Jakie Stemmed projectile point—dating the site to the Early and Middle Archaic and Late Woodland periods. The range of artifact types suggested that hunting, animal processing and stone tool manufacture/maintenance were performed at the site. Niquette (1984) suggested the site was not eligible for listing in the NRHP.

Part of this site—at the eastern and western edges of the previously defined site area—is located in the current project area (Figure 12). The eastern portion of the site is bisected by a dirt road that is heavily rutted and disturbed, with numerous spoil piles. The western part of the site is on a small bench or saddle along a north-oriented spur. The area is covered with oaks and junipers. A representative sample of artifacts was collected from the surface of AOS 123; all material recovered from posthole tests at both AOS 123 and AOS 124 was retained. The collected artifacts include a core;

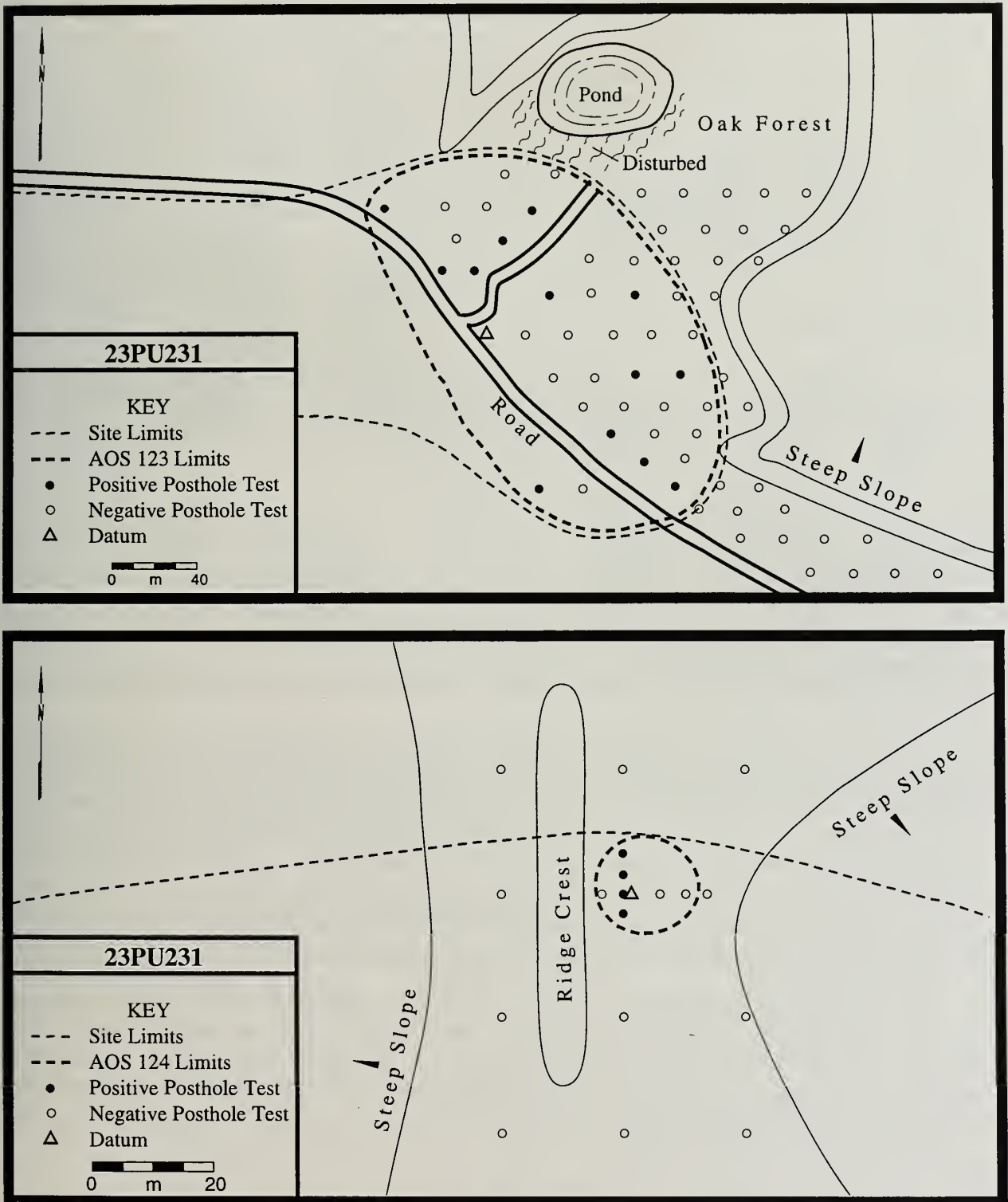


Figure 12. Sketch Map of 23PU231. At top is the eastern portion of the site designated in the field as AOS 123 within the project area. At bottom is a northern portion of the site designated as AOS 124 in the field.

primary, secondary, tertiary, bifacial thinning, bipolar, and broken flakes; and bifaces. Four temporally diagnostic bifaces were recovered (Figure 13). One is a Smith Basal Notched projectile point (Figure 13, a), dating to the Middle and Late Archaic periods (Chapman 1975; Perino 1968). The second appears to be a Stone Square Stemmed projectile point (Figure 13, b) that dates to the Late Archaic period (Chapman 1975); this specimen is thick and crudely worked. The third (Figure 13, c) is possibly a Late Archaic expanding stem (Saratoga Cluster?) point (Justice 1987). The fourth is a broken corner-notched projectile point or knife that has morphologic characteristics of Late Archaic types (Figure 13, d); it may have broken during manufacture. The posthole tests indicate an Ap horizon that is 10 to 20 cm thick, and a variably present E horizon that is 10–15 cm thick above the B horizon. Artifacts were recovered from the Ap and E horizons (Table 3). The site is similar to 23PU241 (described below) in that it is comprised of a number of artifact concentrations rather than a more homogenous distribution of artifacts.

Since the site lies only partially in the survey area, the overall nature of the boundaries and current condition of the site cannot be determined. Although the portion of the site discussed here appears to be disturbed, an accurate determination of evaluation cannot be made for the entire site at this time.

Site Number: 23PU233 (Kerr Mill)

USGS Quadrangle: Waynesville 7.5'

Elevation: 825 m asl

Site Type: Industrial

Soil Type: Clarksville-Gepp very cherty silt loams, 14–35 percent slopes

Component(s): 19th/20th Century

Recommendation: Not Eligible

This site was identified by Niquette (1984:178–180), who described it as a late nineteenth/early twentieth century farm mill, approximately 6,825 m² in size. It is located in a small draw south of Roubidoux Creek (Figure B1) in an area of riparian vegetation. Surface visibility at the time was less than 10 percent. A former resident of the area, Mrs. Helen Kerr, identified the features on the field sketch map as the remains of a barn and granary. The military had removed the buildings and salvaged metal from the site during World War II. Stream scouring of the area during floods also has impacted the site. Damage to the site by the military was estimated at 60 percent and by flooding at 20 percent. Given the degree of disturbance, the site was recommended as not eligible for listing in the NRHP.

The site was revisited during the current investigations. Vegetation consists of dense scrub woods, with surface visibility limited to 10 percent. Site condition does not appear to have changed significantly since it was originally reported (Figure 14). The cellar, two concrete foundations, and smokehouse rubble were all relocated. Heavy weeds prevented relocation of the mill. Given the degree of disturbance documented by Niquette (1984), the site appears to be ineligible for listing in the NRHP. No additional work is recommended.

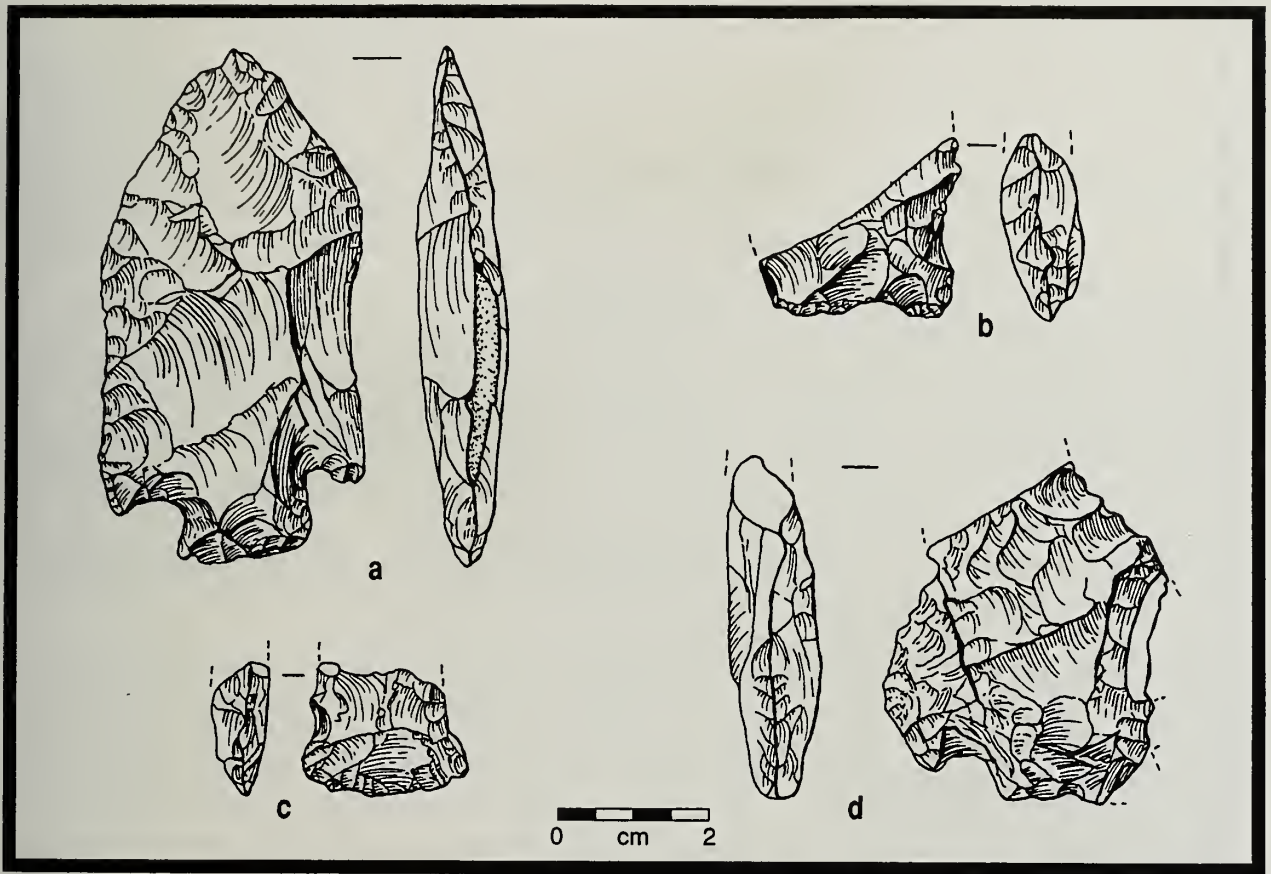


Figure 13. Temporally Diagnostic Projectile Points from 23PU231: a, Middle-Late Archaic Smith Basal Notched; b, Late Archaic Stone Square Stemmed; c, possible Late Archaic expanding stem (Saratoga Cluster?); d, Late Archaic corner notched.

Table 3. Distribution of Artifacts Collected from 23PU231.

<i>Soil Horizon</i>	<i>Depth of Artifacts</i>	<i>Number of Artifacts</i>
Surface	0	236
Ap/Disturbed	Varies	53
Ap/E	Varies	1
E	Varies	17
Uncertain	Varies	3

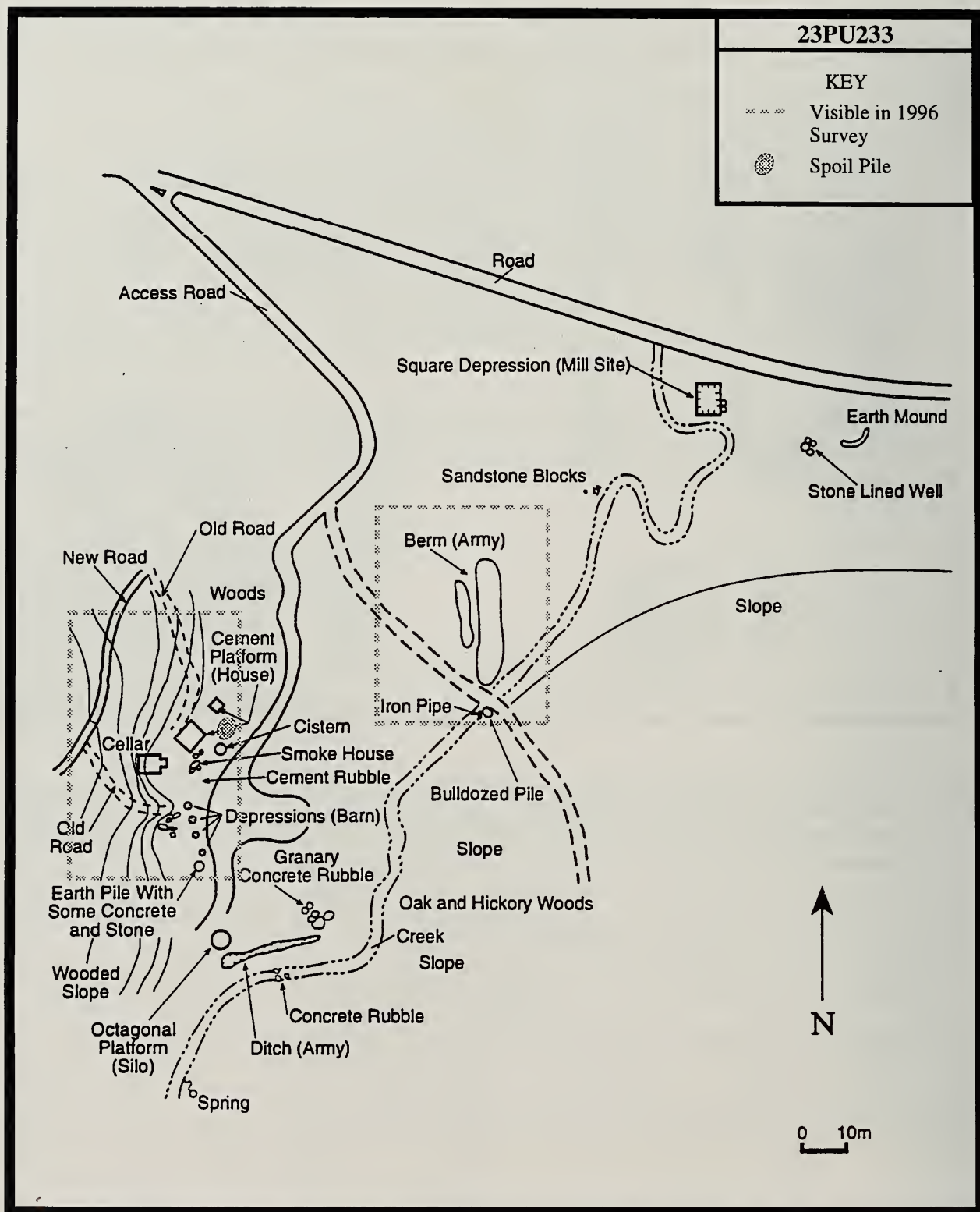


Figure 14. Sketch Map of 23PU233 (after Niquette 1984:180).

Site Number: 23PU234
USGS Quadrangle: Waynesville 7.5'
Elevation: 289 m asl
Site Type: Cairn
Soil Type: Gepp Rock outcrop complex, 35–60 percent slopes
Component(s): Late Woodland
Recommendation: Potentially Eligible

This site, a cairn, was identified by Niquette (1984:155–157). It was found in a cedar glade on a ridge over Roubidoux Creek (Figure B1). Five other cairn sites (23PU222, 23PU311, 23PU312, 23PU313, and 23PU321) and one cave site (23PU152) are located within 1 km of the site. The cairn was composed mainly of dolomite, and measured about 8 m in diameter. Approximately 50 percent of the cairn had been damaged by looting and military use. One-eighth of the cairn was excavated, revealing that it had been constructed directly on decomposing bedrock; no internal structure was identified. Nine pieces of clear bottle glass were found in the disturbed part of the cairn. Two Maramec Cordmarked sherds also were recovered, just above bedrock. The remains of a human child, approximately six years in age, were found. Faunal remains included white-tailed deer and beaver.

The site was relocated during the 1995–1996 field season (Figure 15). Vegetation still consists of a cedar glade and grass, and no additional damage to the cairn was apparent. The central disturbance noted by Niquette (1984) is still present and measures about 1 m in size. No artifacts or human remains were identified on the surface around the cairn. Posthole tests excavated in the area around the cairn were negative. The position of this cairn at the edge of a ridge overlooking a major drainage is consistent with the locations of other cairns in this area and at Fort Leonard Wood in particular, as described above for 23PU224. For this reason it is assigned to the Late Woodland period.

Niquette (1984) indicated the site should be eligible for the NRHP. As stated above, a systematic approach to determining the eligibility of cairns should be developed. Minimally, additional documentation at 23PU234 should include a review of previous fieldwork and the creation of a detailed site plan and topographic map. Once this has been completed, the site should be formally nominated for the NRHP, preferably as part of a multiple property listing nomination.

Site Number: 23PU278b
USGS Quadrangle: Waynesville 7.5'
Elevation: 314 m asl
Site Type: Residence/Farmstead
Soil Type: Doniphan very cherty silt loam, 3–9 percent slopes
Component(s): 20th Century
Recommendation: Not Eligible

This site was initially recorded by Niquette (1984:181–183) as an historic farmstead located 50 m north of an intermittent drainage of Roubidoux Creek (Figure B1). The site was defined as 23PU278a, a habitation, and 23PU278b, a stone pile with historic iron and barbed wire. 23PU278a was located on the Roubidoux Creek floodplain, 14 m east of County Highway H. This portion of the site is

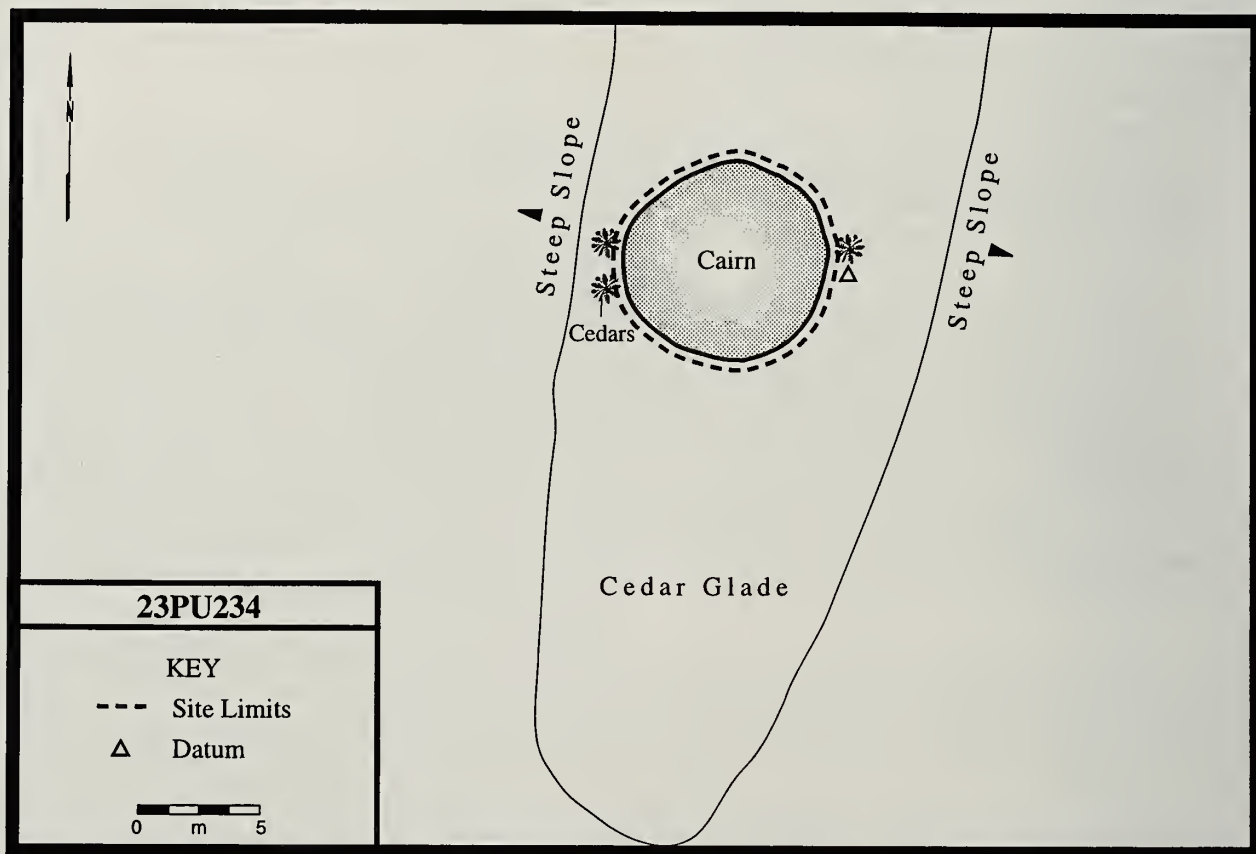


Figure 15. Sketch Map of 23PU234.

outside the current survey tract and was not investigated. Niquette (1984) defined 23PU278a as a 10-x-12-m area that included a poured concrete foundation and associated brick and concrete construction material. A metal pipe noted in the ground was interpreted as possibly identifying the location of a cistern. Except for removal of structures, no other damage to the site was identified. Several holes and depressions were noted, as was a large sinkhole. Vegetation in the area consisted of mixed woodland.

An informant had reported that the feature ultimately recorded as 23PU278b might be a stone-box grave. However, archaeological investigation indicated it was in fact an historic rock pile; no evidence of other historic structures or features was associated with it. This architectural feature was identified in an oak-hickory forest on an upland ridge. There was no evidence of site disturbance. Since this feature was located on the same property as 23PU278a (at least at the time the property was acquired by the Army), it was included as part of the same site. The two portions of the site are approximately 500 m apart. No sketch map of 23PU278b was included in Niquette's 1984 report.

Only the portion of the site designated as 23PU278b falls in the project area. Despite intensive surface reconnaissance, no evidence of the stone pile was identified. This area appears to have been

used as a bivouac site, and a high degree of disturbance is present. The area has been extensively scraped, with the excavated dirt piled around trees; bedrock is present at surface across the reported site area. Since no artifacts or features were found, no sketch map was prepared.

No structure is shown at the location of either 23PU278a or 23PU278b on the 1954 Waynesville 7.5' quadrangle or on the 1948 15' quadrangle. It appears that 23PU278b has been destroyed by earthmoving activities, and is, therefore, not eligible for listing in the NRHP.

Site Number: 23PU314 (95-45: AOS 103)

USGS Quadrangle: Waynesville 7.5'

Elevation: 253 m asl

Site Type: Lithic Tool and Debris Scatter

Soil Type: Nolin silt loam

Component(s): Late Archaic, Early Woodland, Mississippian (Late Prehistoric)

Recommendation: Potentially Eligible

23PU314 was first reported by Niquette (1984:122-125) as an open-air site in a heavily overgrown area on a terrace remnant above the Roubidoux Creek floodplain (Figure B1). An unnamed intermittent drainage of Roubidoux Creek is located 30 m to the south. Vegetation consisted of secondary bottomland scrub, weeds and briars with poor visibility. A dirt road that crosses the site and a wildlife foodplot provided some surface visibility. The site was defined as 42,900 m² in size, with complete disturbance to the surface. An intensive surface collection was made of the road and foodplot, and four 1-x-1-m test units also were excavated. Three temporally diagnostic projectile points were recovered from the surface: a reworked Late Archaic to Middle Woodland Gary point, a Middle to Late Archaic Smith Basal Notched point, and a Mississippian (Late Prehistoric) Triangular arrow point. Also recovered were fire-cracked rock, biface fragments, a side scraper, a hammerstone, cores, and flakes, suggesting that all stages of the lithic reduction sequence were performed at the site. Artifacts from the test units were confined to the plow zone.

A review of aerial photographs of Fort Leonard Wood indicated that the area twice had been stripped of topsoil, in 1964 and 1967. To see if deeply buried features or cultural deposits were present, seven 1-x-8-m backhoe trenches were excavated across the site. One hearth was identified at 45-60 cm below surface that is possibly "pre-Late Archaic" in age (Niquette 1984:123). A deeper cultural stratum consisting of charcoal flecks and lithic debitage also was identified in the same backhoe cut at 220-240 cm below surface, suggesting that intact cultural deposits were present at the site. Niquette (1984) recommended the site as eligible for the NRHP.

Only a small portion of the southern edge of this site, in the wildlife foodplot, falls in the current project area (Figure 16). Two secondary flakes (one utilized) and a piece of plastic were recovered from the 10-15 cm level of one posthole test. No material was visible on the surface. Since only part of the site was in the project area, the current condition of the site as a whole has not been determined. Neither can site size or degree of impact be estimated. While Niquette (1984) did test excavations, the documentation is rather poor. The report contains no stratigraphic profiles of the excavations, no illustration of the hearth feature, and no detailed discussion of the distribution of artifacts. Given the

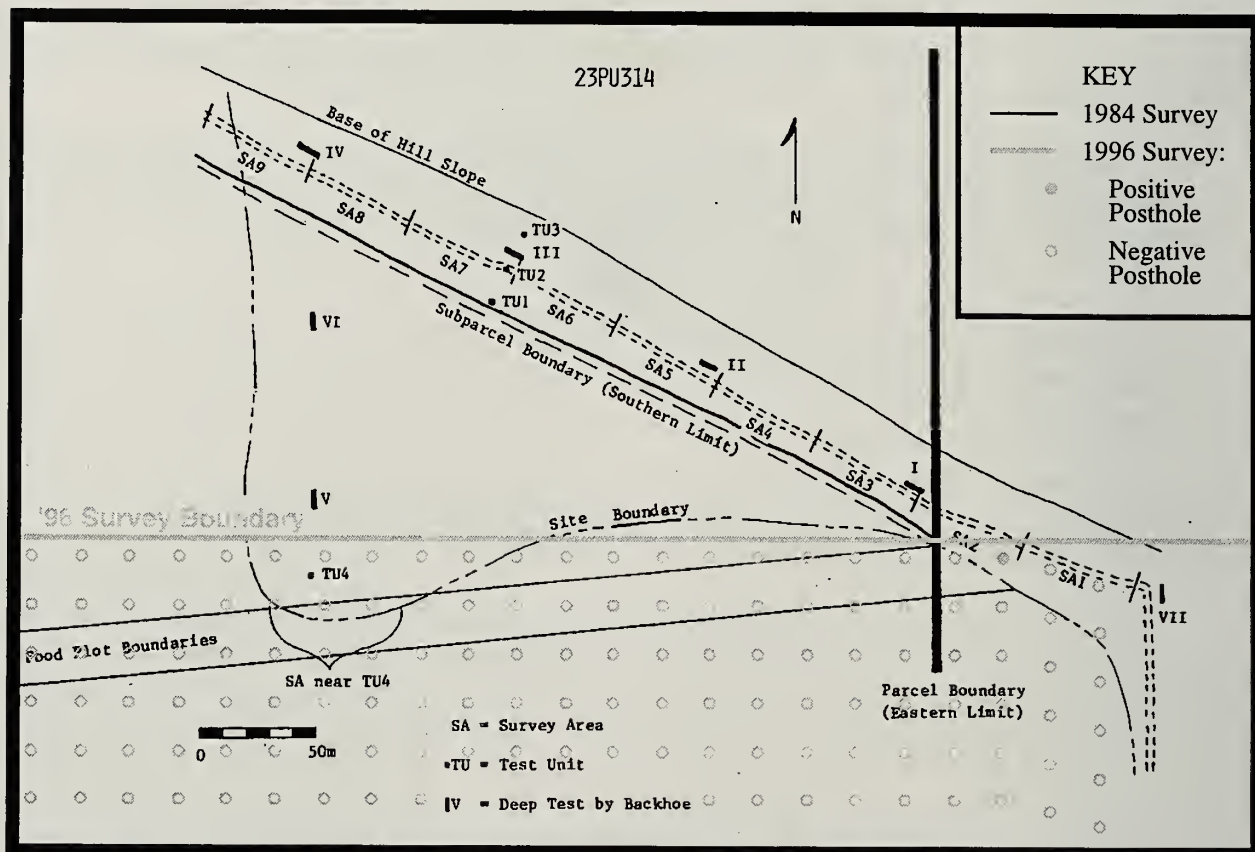


Figure 16. Sketch Map of 23PU314 (after Niquette 1984:125).

poor quality of documentation on the previous work and the possible presence of deeply buried cultural deposits at this site, Phase II evaluation should be conducted to determine the actual extent of such deposits and whether the site is eligible for listing in the NRHP.

Site Number: 23PU319 (95-45: AOS 129)

USGS Quadrangle: Waynesville 7.5'

Elevation: 320 m asl

Site Type: Lithic Debris Scatter

Soil Type: Lebanon silt loam, 2-5 percent slopes

Component(s): Late Archaic

Recommendation: Potentially Eligible

This site was first recorded by Niquette (1984:137-142) as a diffuse lithic scatter along the crest of a narrow upland ridge (Figure B1). The site was identified in an oak-hickory forest, 100 m north of an intermittent drainage of Roubidoux Creek. The site form indicates maximum dimensions of 520 m north-south by 220 m east-west. A dirt road bisected the site. Site disturbance due to excavation

and earthmoving was estimated at 25 percent. A controlled surface collection was made along the road, and shovel tests and two test units also were excavated. Collected artifacts included a thin biface, a side scraper, secondary flakes, tertiary flakes, block shatter, and fire-cracked rock. Artifact density was highest in the northern part of the site. A fire-cracked rock feature was identified in Test Unit 2, in which a Late Archaic Afton projectile point also was recovered. The site dates minimally to the Late Archaic period, and tool manufacture or maintenance was conducted, although other activities were probably carried out as well.

Only the southwestern edge of the site is present in the survey area reported here (Figure 17). A complete collection of surface material was made. Artifacts found on the surface include two nonhafted bifaces, one secondary flake and two tertiary flakes. Two tertiary flakes also were recovered from the A and B horizons respectively of a single posthole test. Although the soils are thin in the area covered under this survey, the entire site is not located in the survey area, and its overall current condition is unknown. Based on the original site data (Niquette 1984), the site is eligible for listing in the NRHP. However, the documentation of the fieldwork conducted at that time is incomplete. In the report, there are no stratigraphic profiles of the test units, no site plan map showing the location of the test units, and no illustration of the fire-cracked rock feature. Given these problems, Phase II evaluation of the site may be warranted.

Site Number: 23PU320

USGS Quadrangle: Waynesville 7.5'

Elevation: 338 m asl

Site Type: Residence/Farmstead

Soil Type: Doniphan very cherty silt loam, 3–9 percent slopes

Component(s): 19th/20th Century

Recommendation: Not Eligible

This site was first reported by Niquette (1984:195–196) as a late nineteenth/early twentieth century farmstead on a ridge 250 m northwest of an unnamed intermittent drainage of Roubidoux Creek (Figure B1). The site was found in an oak-hickory forest with scattered cedars, fruit trees, yucca, and irises. A dirt road bisected the site. Site size was estimated at 52,500 m². The site consisted of three field-stone walls or segments, a cairn-like pile of chert blocks, several depressions (possibly outbuilding locations), and scattered sandstone and chert rubble. Except for the removal of the above-ground structures, no evidence for disturbance was noted.

The site was relocated during the current investigations (Figure 18). Vegetation consisted of conifers (75 percent) and hardwoods (25 percent) at this time; yucca and irises also were present. There was no surface visibility. Of the architectural features originally identified by Niquette (1984), only two remnants of the field-stone wall remain. Much of the area, especially in the east half of the site, has been disturbed by foxholes and spoil piles. No artifacts were recovered from the surface or posthole tests placed in the area around the site. The site does not appear on the 1948 Waynesville 15' quadrangle. Niquette (1984) listed the site as ineligible for the NRHP based on a lack of integrity. Given the degree of disturbance and the relatively recent date of the site, it is considered ineligible for listing in the NRHP. No further work is recommended.

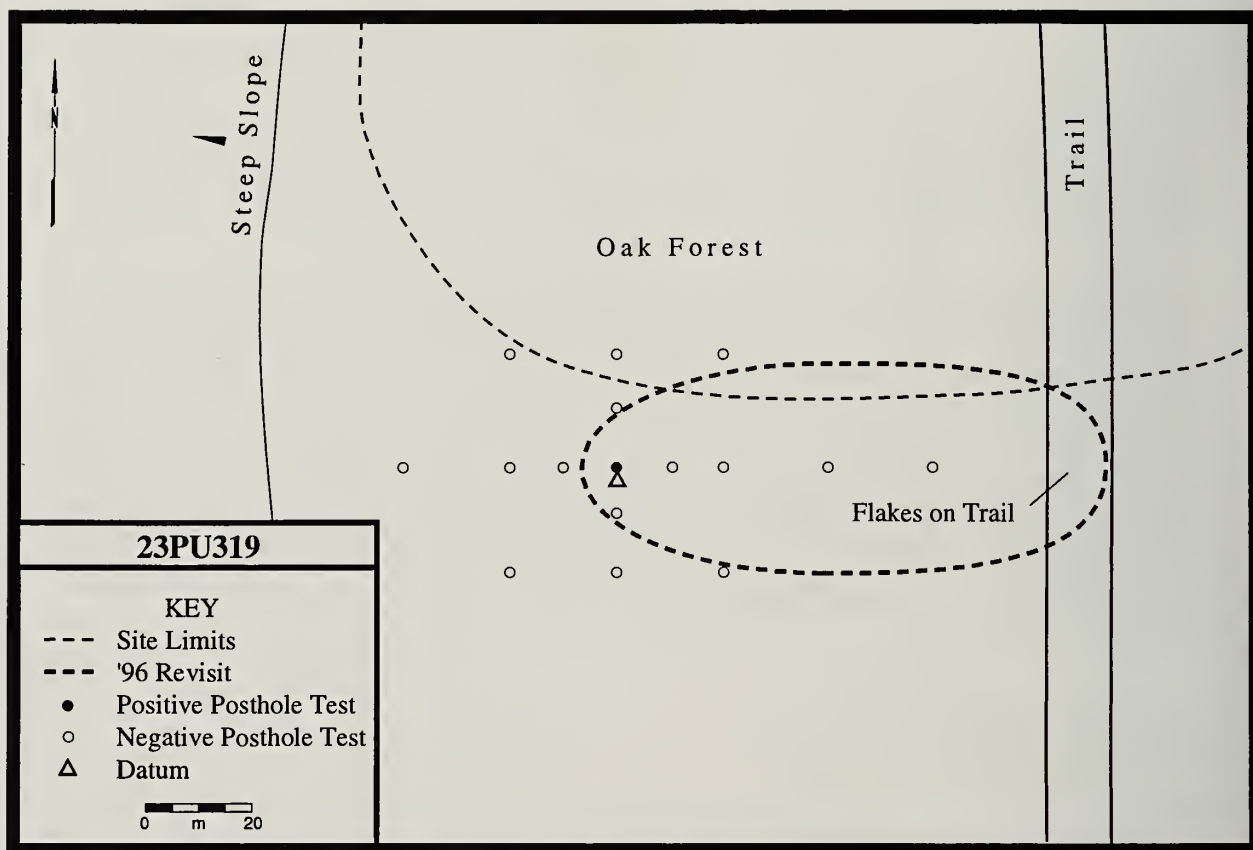


Figure 17. Sketch Map of 23PU319.

Site Number: 23PU550

USGS Quadrangle: Waynesville 7.5'

Elevation: 290 m asl

Site Type: Residence/Farmstead

Soil Type: Doniphan very cherty silt loam, 3-9 percent slopes

Component(s): 19th-20th Century

Recommendation: Not Eligible

This site was recorded with the ASM in 1994 by Fort Leonard Wood personnel as a late nineteenth/early twentieth century farmstead. The site is located 75 m from an intermittent drainage in the uplands west of the Big Piney River (Figure B1). Site area was calculated at 10,000 m². The site consists of a concrete foundation, possibly from a barn, a well, a root cellar, and a possible house site. The site appears on the 1948 acquisition maps as the J. O. Adkison residence. It is also visible on the 1938 aerial photograph of the area. No artifacts were collected.

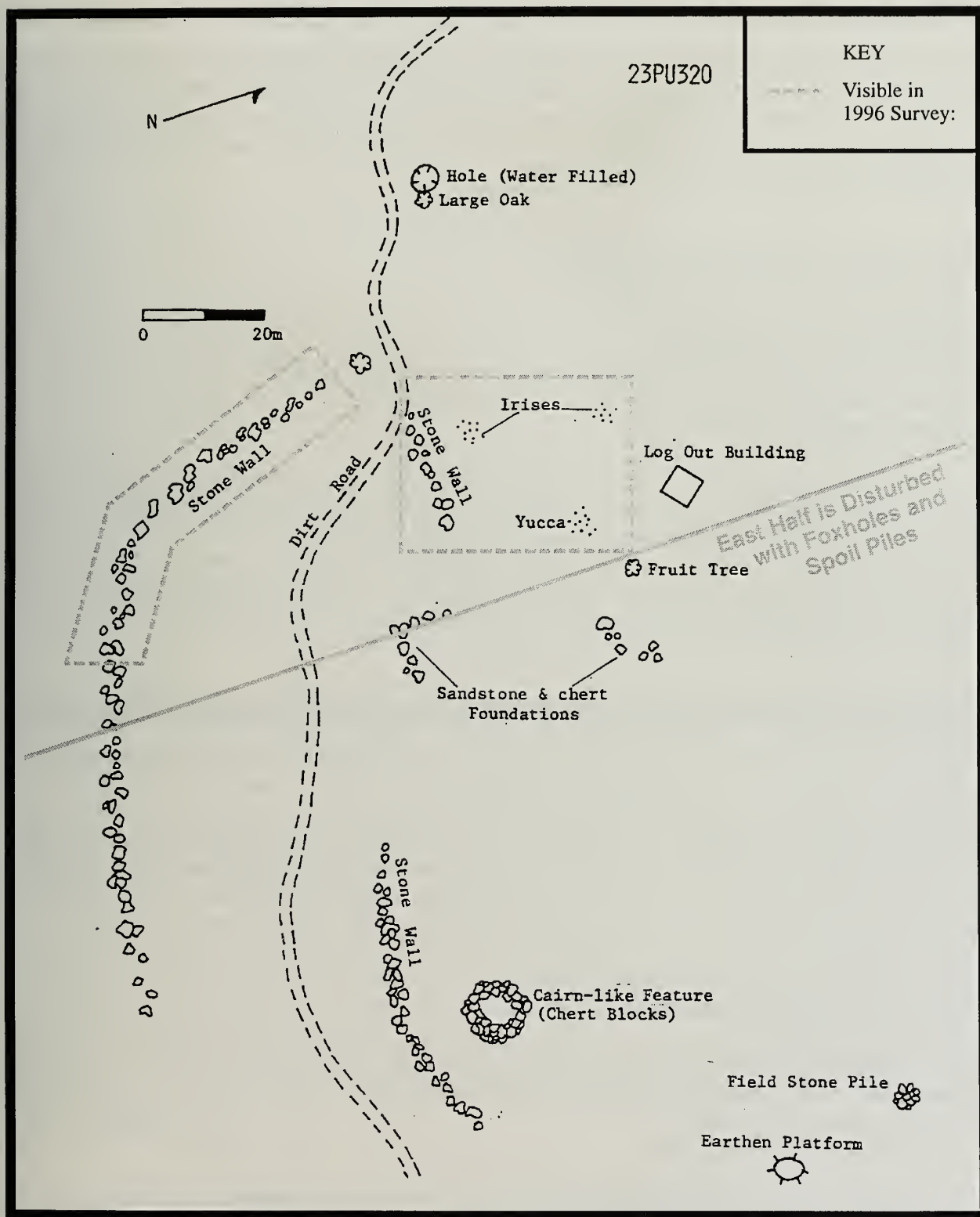


Figure 18. Sketch Map of 23PU320 (after Niquette 1984:196).

Despite two intensive surveys of the area, the site could not be relocated. Heavy vegetation consisting of dense scrub oak, cedars, and herbaceous ground cover resulted in surface visibility of only 10 percent. Posthole tests and surface survey did not reveal any artifacts or structural features, and no sketch map was prepared. Based on the lack of archaeological evidence, the site location reported for 23PU550 is ineligible for listing in the NRHP.

Site Number: 23PU645 (95-45: AOS 127)

USGS Quadrangle: Waynesville 7.5'

Elevation: 311 m asl

Site Type: Lithic Debris Scatter

Soil Type: Doniphan very cherty silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This site is located in the uplands at the crest of an east-trending ridge overlooking the Roubidoux Creek valley (Figure B1). An unnamed intermittent drainage is 200 m to the south. The site is situated near a break in slope leading toward the valley, some 400 m to the east. The site is located 200 m east of 23PU319 and has a logging road through its eastern end. The entire site area is covered with an oak forest that had 30 percent surface visibility at the time of survey. Extensive evidence for recent disturbance by logging activities was noted, consisting of cut and fallen trees, bulldozed areas for road access and staging, and stump removal.

Eight posthole tests, three of which were positive, were excavated within the limits of the site. Based on the extent of the three positive tests and two surface collected flakes, a site area of 40 m north-south by 60 m east-west was defined (Figure 19). Postholes 1 and 3 evidenced disturbed profiles. Posthole 2, adjacent to the logging road, appeared intact, with an A-B soil horizon sequence. Lithic debitage, consisting of eight broken flakes and three tertiary flakes, was recovered from the ground surface and the upper 10 cm of three posthole tests. Minimally, nine of the flakes from this site are from the surface or disturbed soil strata. This site is recommended as ineligible for the NRHP based on the limited number of artifacts and adverse impacts from logging. No further work is recommended.

Site Number: 23PU646 (95-45: AOS 131)

USGS Quadrangle: Waynesville 7.5'

Elevation: 320 m asl

Site Type: Residence/Farmstead

Soil Type: Doniphan very cherty silt loam, 3-9 percent slopes

Component(s): 20th Century

Recommendation: Not Eligible

This site is an historic farmstead located on a hilltop on a broad upland ridge north of Roubidoux Creek (Figure B1). An unnamed intermittent drainage flows 300 m to the southwest. The site extends north and south of a field road and covers an area 60 m north-south by 25 m east-west. Vegetation at the time of the survey included a mixture of conifer and oak trees, with the former dominant. There

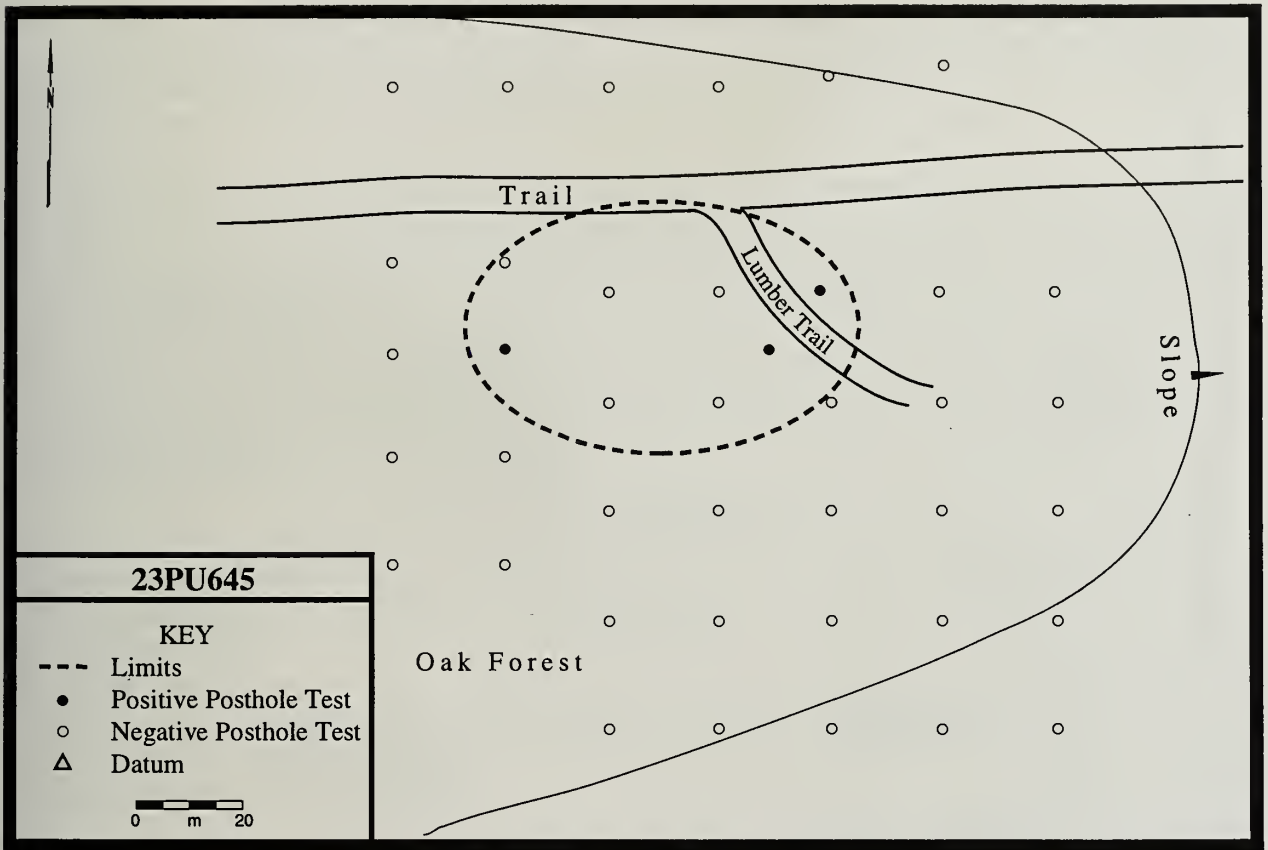


Figure 19. Sketch Map of 23PU645.

was no surface visibility at this site, but numerous depressions indicating extensive subsurface disturbance by earthmoving equipment were noted.

A number of surface features were noted at this site (Figure 20). Located were a limestone cistern with a concrete liner and three piles of limestone, which may be the remains of destroyed structures. The cistern was filled with modern trash, and it appears the site is being used as a dump. A number of modern debris piles also were present at the site that included structural materials. Artifacts observed in the cistern, but not collected, include machine-made bottles and a "Magic Chef" stove, all dating to the first half of the twentieth century. One flat metal fragment marked "American Stove Co." was collected. Posthole tests indicate the area has been heavily disturbed. No artifacts were recovered from the posthole tests.

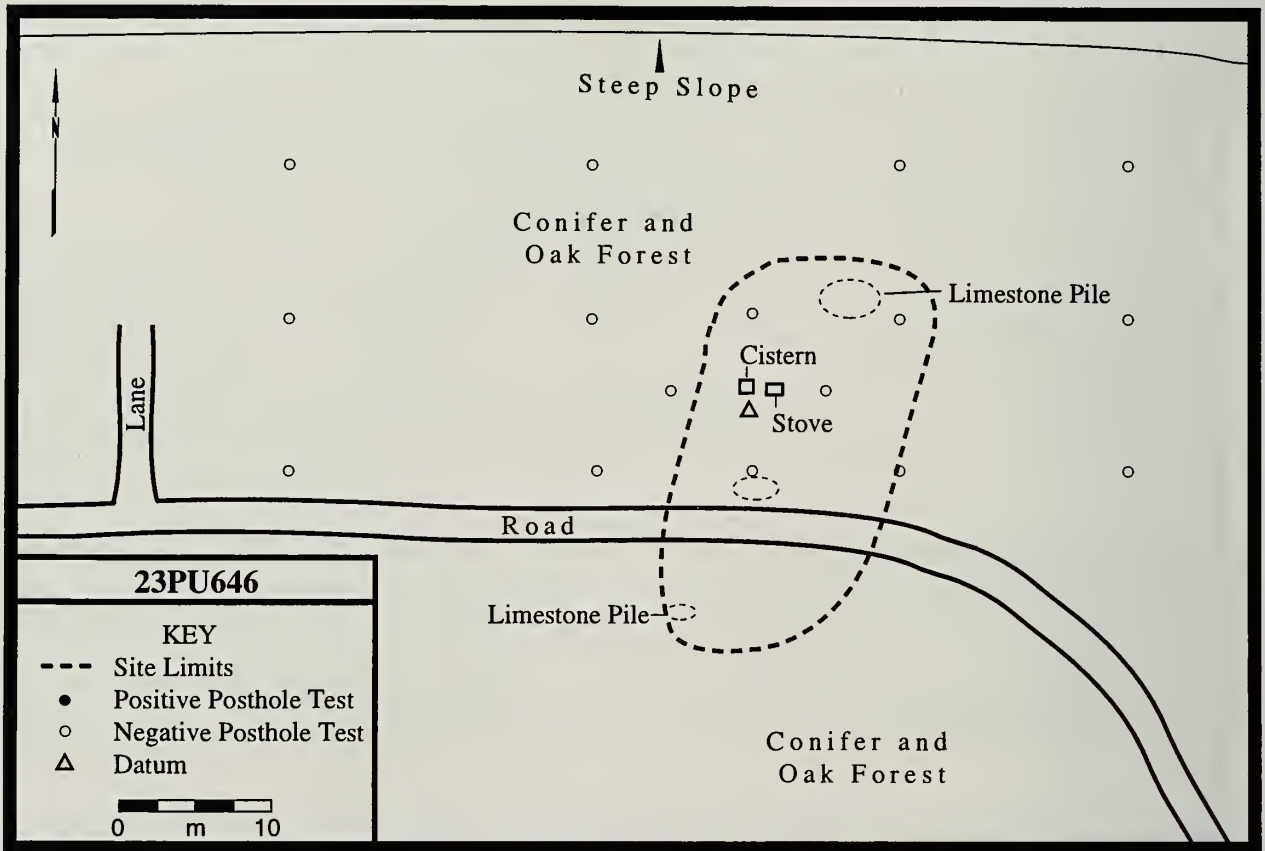


Figure 20. Sketch Map of 23PU646.

Documentary research using historic maps and aerial photographs failed to provide additional data on this site. Structures cannot be detected on the aerial photographs of the 1930s and 1940s, and the 1948 Waynesville 15' quadrangle does not depict a residence at this location. This site is recommended as ineligible for the NRHP based on the level of disturbance that has occurred which has compromised site integrity and the presence of extant farmsteads of this period elsewhere in the Ozarks. No additional investigations are recommended.

Site Number: 23PU647 (95-45: AOS 132)

USGS Quadrangle: Waynesville 7.5'

Elevation: 302 m asl

Site Type: Lithic Debris Scatter

Soil Type: Doniphan very cherty silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This site is located on a narrow upland ridge that descends to the southeast toward the Roubidoux Creek valley (Figure B1). The site is located on an oak-covered ridge crest between two steep-sided drainages to the east and west. This site is almost 300 m north of Roubidoux Creek. Surface visibility averaged 50 percent, the result of bedrock exposure on the western side of the site.

The roughly oval site is defined as 30 m north-south by 35 m east-west, based on a surface-collected thick biface fragment and a single positive posthole test (Figure 21). Site stratigraphy, while variable, generally consisted of a 10-cm thick A horizon followed by a 10-cm thick E horizon, underlain by the B horizon. In one area the A horizon is not present and appears to have been eroded away. Two chert flakes (tertiary and broken) were recovered from 0–15 cm below surface in the one positive posthole test. No other material was recovered from the surrounding 10-m grid of posthole tests, and no other artifacts were recovered from the surface. This location is recommended as ineligible for the NRHP based on the limited amount of artifacts recovered and the degree of surface erosion present. No additional investigations are recommended.

Site Number: 23PU648 (95–45: AOS 133)

USGS Quadrangle: Waynesville 7.5'

Elevation: 262 m asl

Site Type: Lithic Debris Scatter

Soil Type: Clarksville-Gepp very cherty silt loams, 14–35 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Potentially Eligible

This site is located on a side-slope bench near the confluence of an unnamed drainage with Roubidoux Creek (Figure B1). The bench is approximately 100 m north of and 15 m above Roubidoux Creek. The area is covered by oaks and a few juniper trees, with leaf litter, grass and weeds resulting in no surface visibility.

Site boundaries are defined by steep slopes and the extent of six positive posthole tests, encompassing a roughly oval area 35 m north-south by 20 m east-west (Figure 22). Soil stratigraphy consists of an A horizon, generally about 10 cm thick, followed by a 10-cm thick E horizon, with either bedrock or a B horizon below. Posthole 5, located on the topographically highest point of the site, exhibited a shallow soil profile, most probably due to erosion. Deeper soil profiles downslope from this test may be due to the deposition of eroded soils. A total of 20 artifacts was recovered from the six positive tests, consisting of 13 broken flakes, five tertiary flakes and two blades (Table 4). Artifacts were recovered from intact E or BE horizon deposits, including a number of flakes found to 30 cm below surface in Posthole 3. The remainder of the flakes were collected from the A or E soil horizons.

The soil profiles and depth of artifact deposition indicate that the site has generally good vertical integrity. The recovery of cultural material from relatively intact soils indicates a high potential for in situ remains. Based on the level of preservation present at this site, it is recommended as potentially eligible for the NRHP. Phase II investigations are recommended. The Phase II work should focus on mapping site boundaries, determining if intact features are present through test unit excavations, and on recovering diagnostic artifacts and floral and faunal remains (if possible).

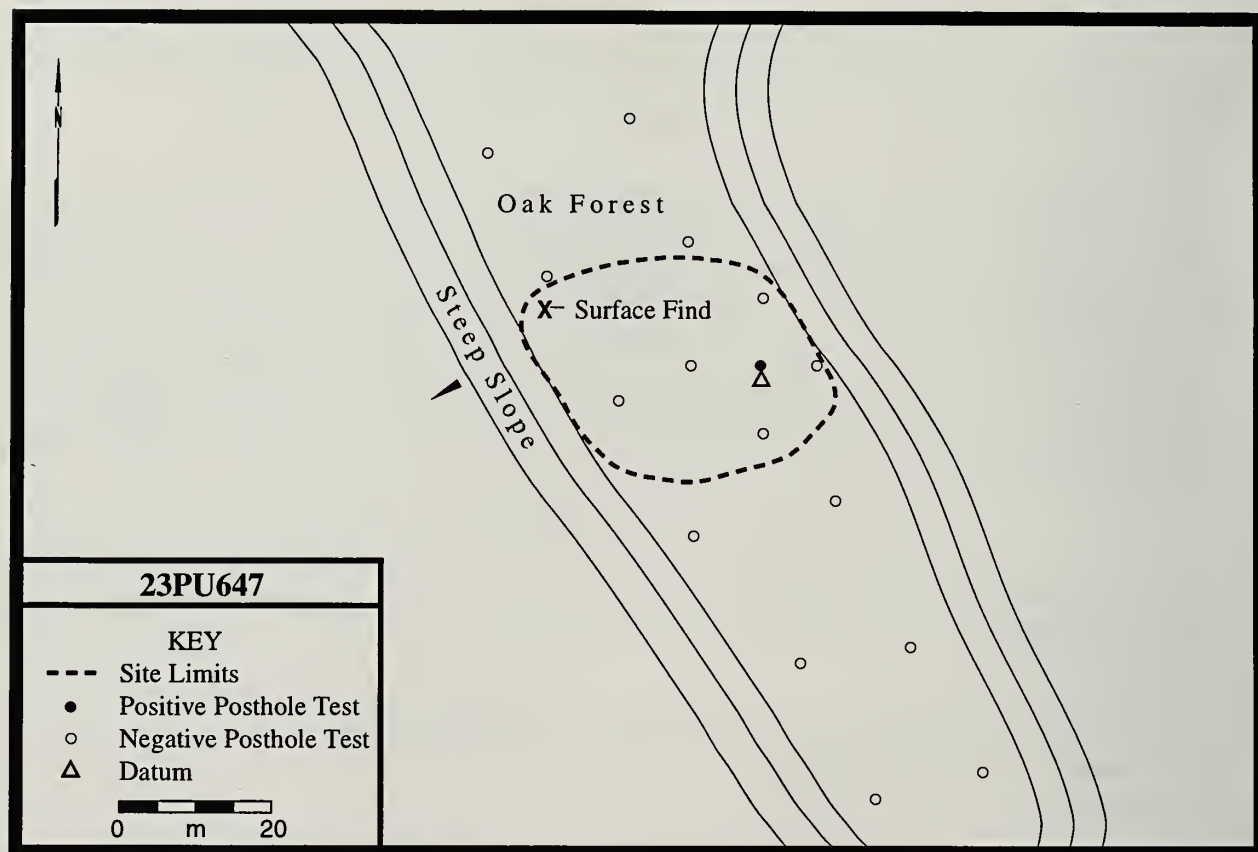


Figure 21. Sketch Map of 23PU647.

Site Number: 23PU649 (95-45: AOS 134)

USGS Quadrangle: Waynesville 7.5'

Elevation: 305 m asl

Site Type: Residence/Farmstead

Soil Type: Doniphan very cherty silt loam, 3-9 percent slopes

Component(s): 20th Century

Recommendation: Not Eligible

This site is situated on a ridge saddle along the south side of an east-west road in the uplands between unnamed intermittent drainages that flow into the Roubidoux Creek valley (Figure B1). Roubidoux Creek is located 950 m to the south. Cedar and juniper trees account for most of the vegetation. The presence of small hardwoods, roses, yucca plants, daffodils, and tulips suggest that the site represents a domestic residence. The area had approximately 40 percent surface visibility at the time of this survey, except for recently mechanically scraped areas that had up to 90 percent surface visibility.

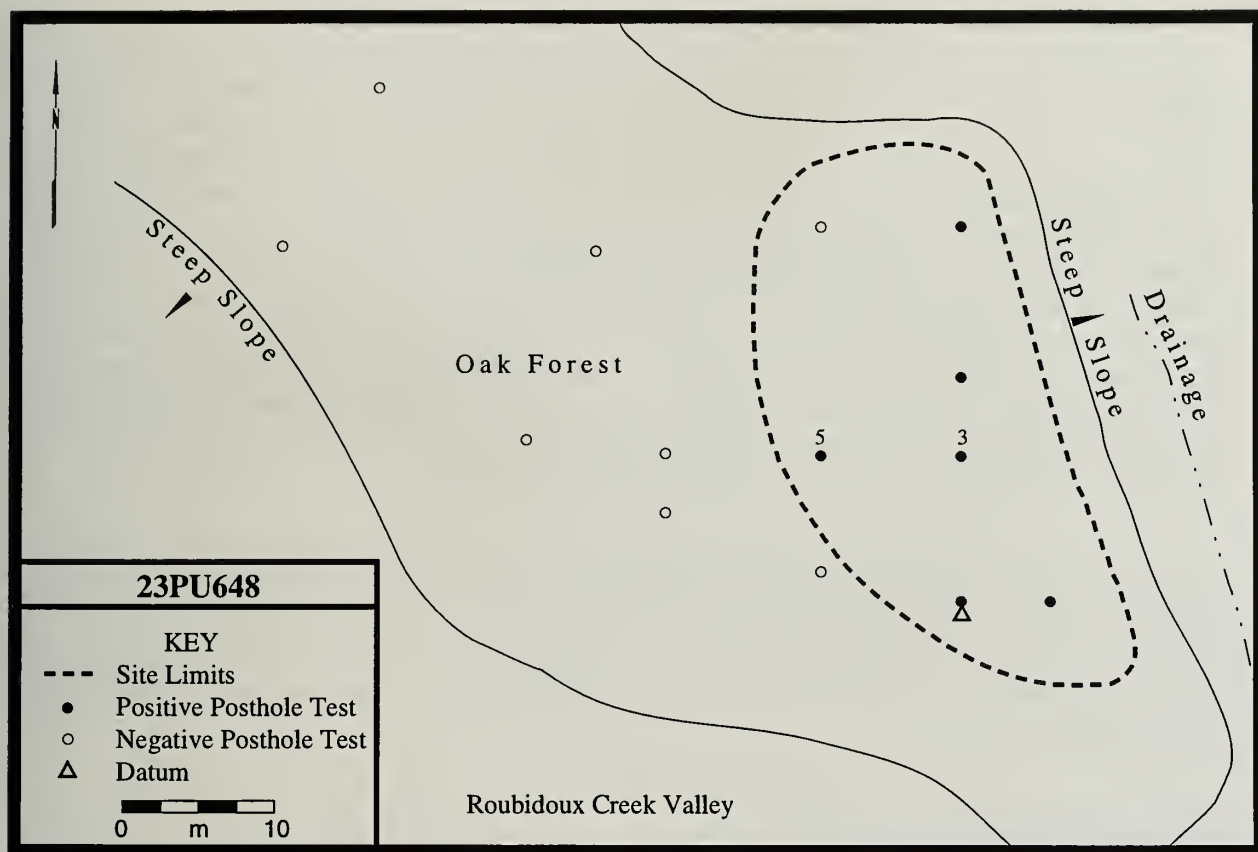


Figure 22. Sketch Map of 23PU648.

Table 4. Distribution of Artifacts Collected from 23PU648.

<i>Soil Horizon</i>	<i>Depth of Artifacts</i>	<i>Number of Artifacts</i>
A	0-10 cm	9
A/E	0-10 cm (Posthole 5)	4
E	10-20 cm	2
BE	20-30 cm (Posthole 3)	5

Within the site area, a number of spoil piles of concrete building material and twentieth-century domestic artifacts are present. Also identified were a possible well and open cistern located among the spoil piles. Based on the extent of the building material piles and artifacts, a site area of 40 m north-south by 60 m east-west was defined (Figure 23). It is also possible that this site once extended north of the road, but that area had been mechanically scraped and no material was found there. Artifacts observed in the site area, but not collected, include a galvanized wash tub, graniteware bowls, machine-made bottle fragments, undecorated ironstone, and an undecorated porcelain mug. Collected from the surface and spoil piles were a complete mold-made ink jar, a condiment jar with a screw-lid top, undecorated ironstone fragments, cut glass fragments, and green canning jar fragments. Recovered from two positive postholes were a metal rasp/file, a clear flat glass fragment, and a piece of clear bottle glass. All of these artifacts are consistent with a twentieth-century occupation of the site. The amount of artifacts in the spoil piles suggests that features or a midden have been disturbed at 23PU649 by the recent mechanical scraping. A search of historic aerial photographs and maps failed to yield evidence for a structure at this location in the 1930s and 1940s.

Based on the architectural rubble, presence of a well and cistern, domestic flora, and household artifacts, this site is interpreted as an early twentieth-century residence, probably associated with a farm. This site is recommended as ineligible for the NRHP based on the level of disturbance that has occurred which has compromised site integrity, the relatively late date of occupation, and the fact that surviving examples of residences of this date are present in the Ozarks. No additional investigations are recommended.

Site Number: 23PU655 (95-45: AOS 104)

USGS Quadrangle: Waynesville 7.5'

Elevation: 253 m asl

Site Type: Lithic Debris Scatter

Soil Type: Nolin silt loam

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This site is a prehistoric lithic scatter located on a terrace above Roubidoux Creek (Figure B1). The site is approximately 150 m north of the current Roubidoux Creek channel on a subtle rise. An east/west field road is located within 50 m of the site to the south. The site is located in a former agricultural field that has been converted to wildlife food plots, which are occasionally burned. Vegetation at the time of investigation was a dense mixture of grasses and briars, with a small number of juniper and oak trees. There was no surface visibility. The oblong-shaped site is defined as 20 m north-south by 40 m east-west in size, based on four positive posthole tests (Figure 24). No additional material was recovered from a 10-m grid of posthole tests surrounding the positive tests.

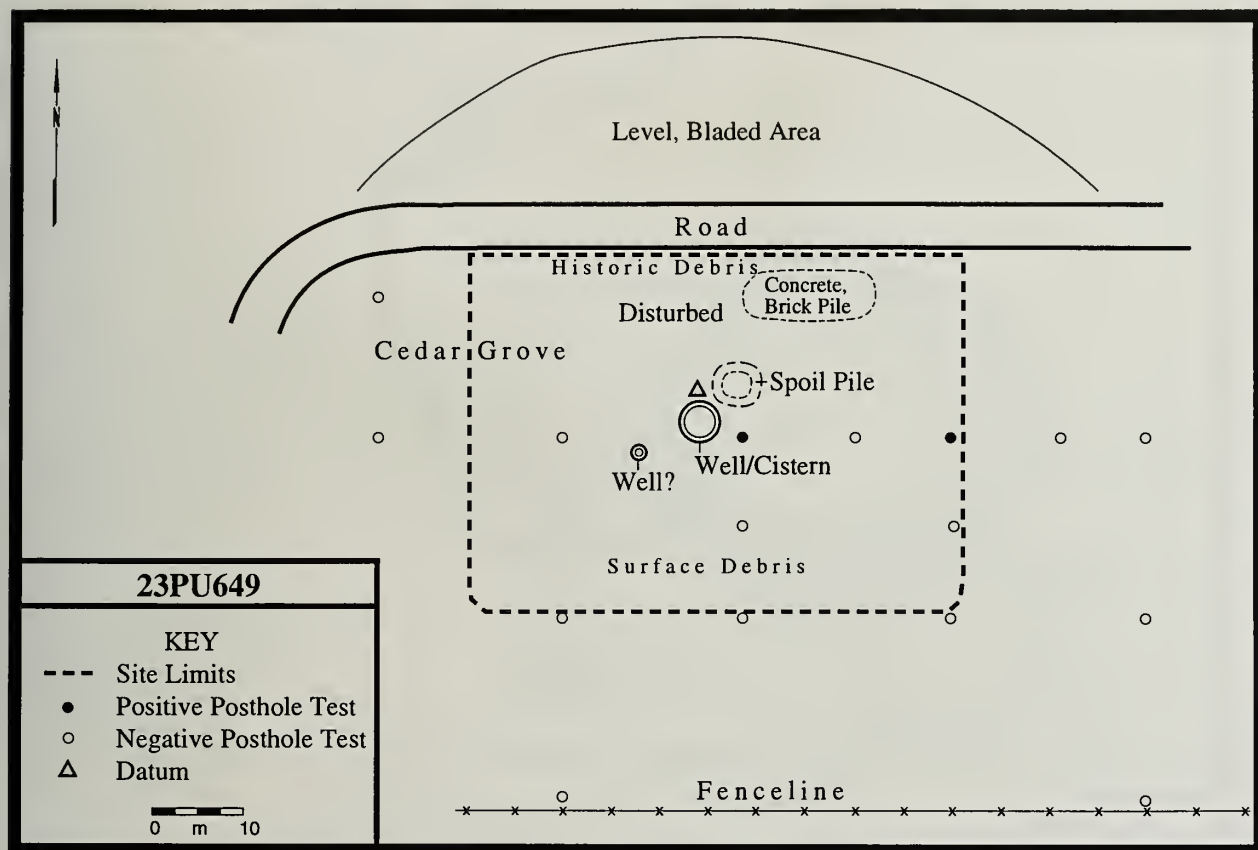


Figure 23. Sketch Map of 23PU649.

Soil profiles from the positive tests indicated the presence of an Ap horizon (plow zone) to 20 cm below surface followed by the B horizon. Eight pieces of lithic debris were recovered from the four positive posthole tests, consisting of one secondary flake and three broken flakes from the plow zone and one tertiary flake and three broken flakes from the Bw horizon. No material was found on the surface. The site assemblage consists of items typically associated with the later stages of lithic reduction. Disturbance to the site area appears to be limited to past agricultural practices, although this location also is reported to have been used in the past for engineer training and qualification exercises.

This site is recommended as ineligible for the NRHP based on its low density and diversity of nondiagnostic artifacts and the apparent lack of intact cultural deposits. No additional work is recommended.

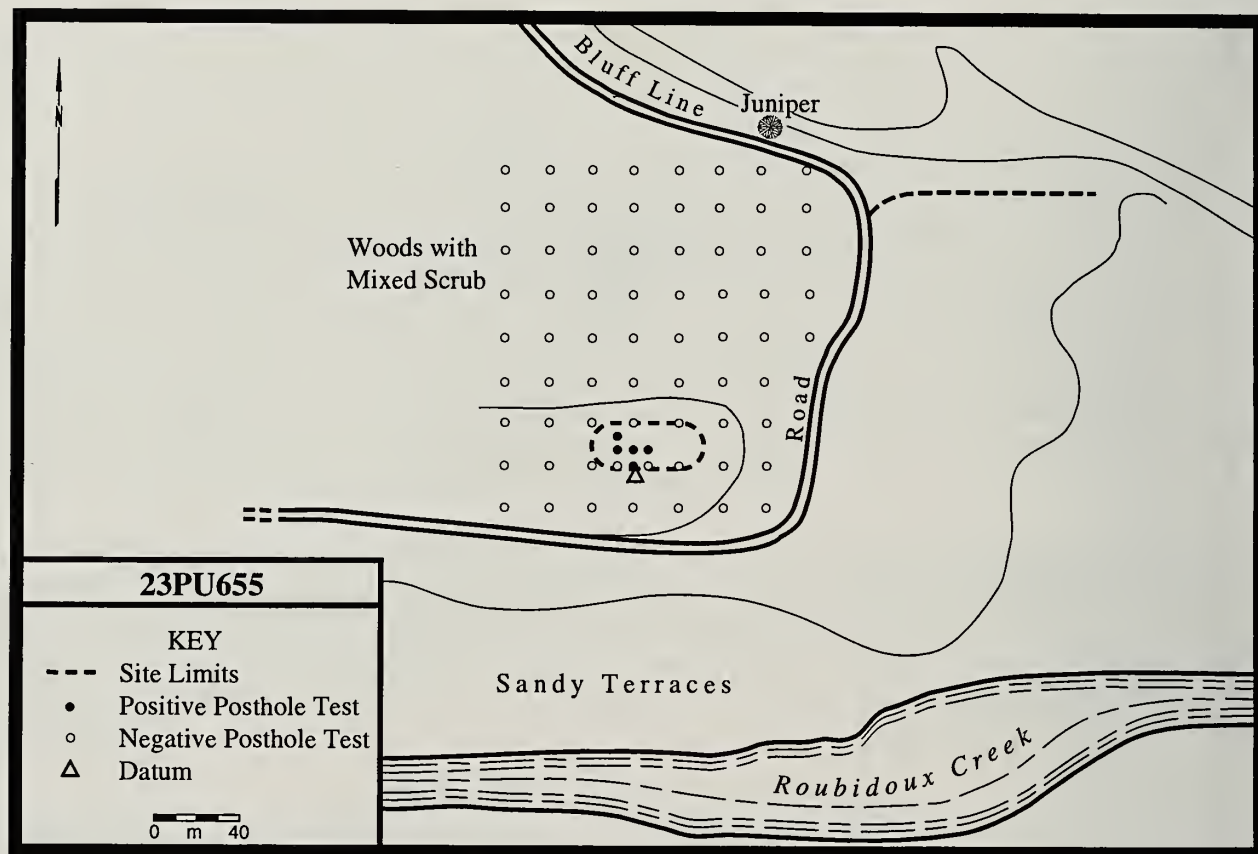


Figure 24. Sketch Map of 23PU655.

Site Number: 23PU656 (95-45: AOS 105)

USGS Quadrangle: Waynesville 7.5'

Elevation: 305 m asl

Site Type: Cairn

Soil Type: Doniphan very cherty silt loam, 3-9 percent slopes

Component(s): Late Woodland

Recommendation: Potentially Eligible

This previously unrecorded cairn site is located in the uplands on a narrow ridge south of Roubidoux Creek, approximately 400 m from the bluff edge (Figure B1). The site area is covered with a mature oak forest and is situated at the point where the upland ridge begins to steeply descend to the north, east, and west. This cairn is set farther back from the bluff edge than are others at Fort Leonard Wood, although it is near the edge of a spur ridge on the bluff. There was no surface visibility at the time of survey.

Site 23PU656 is defined as a rock cairn and a small buffer zone, totaling 10 m in diameter (Figure 25). The limestone cairn itself covers an area approximately 7.5 m north-south by 8.5 m east-west.

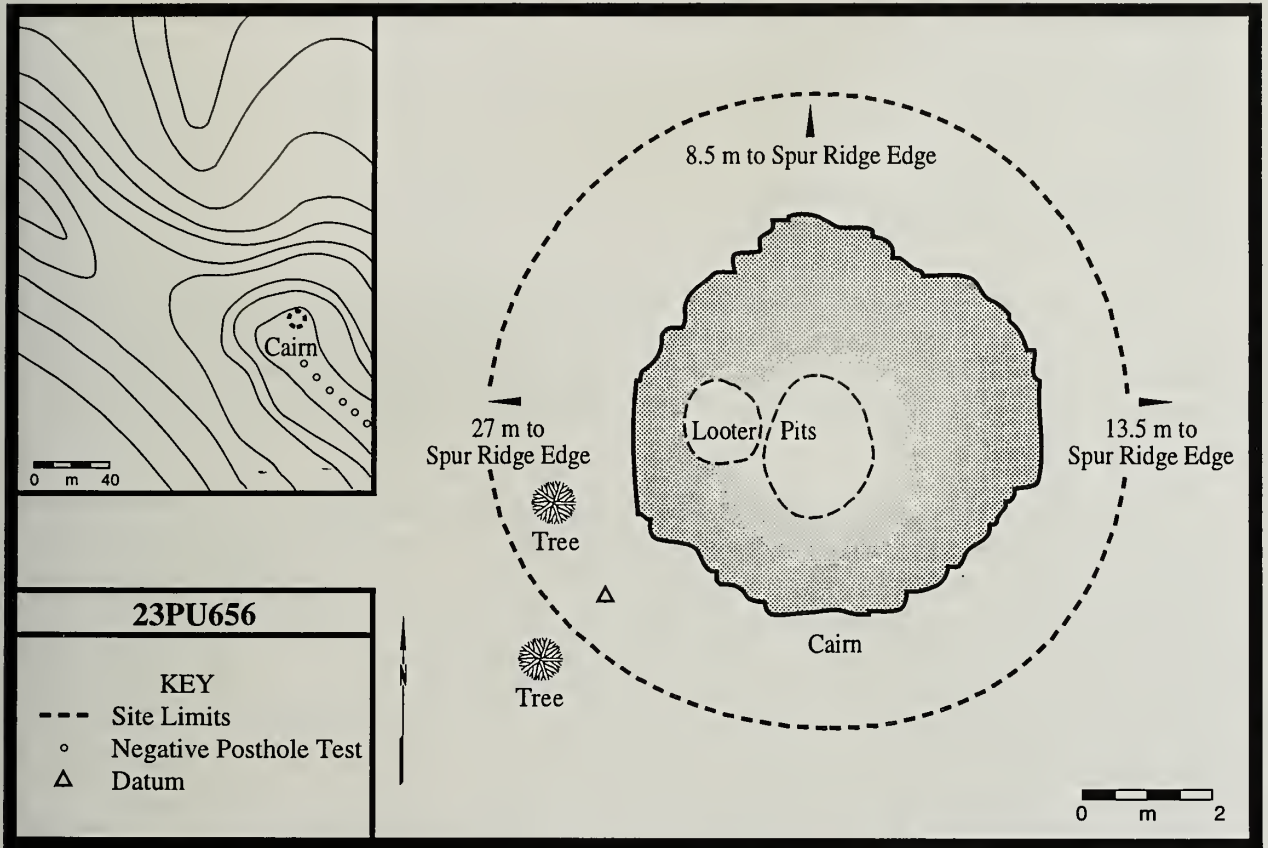


Figure 25. Sketch Map of 23PU656.

The cairn had been looted, and two looter's pits were observed near its center. Damage is estimated at 15 percent. Posthole tests were excavated adjacent to the cairn, but no cultural materials were recovered. No artifacts or human remains were observed on the surface or within the limestone rubble of the cairn.

The position of this cairn at the edge of a ridge overlooking a major drainage is consistent with the locations of other cairns in this area and at Fort Leonard Wood in particular, as described above for 23PU224. For this reason it is assigned to the Late Woodland period. Minimally, additional documentation at 23PU656 should include the creation of a detailed site plan and topographic map and description of damage from looting. Once this has been completed, the site should be formally nominated for listing in the NRHP, either as a single site or, preferably, as part of a multiple property listing nomination.

Site Number: 23PU657 (95-45: AOS 109)

USGS Quadrangle: Waynesville 7.5'

Elevation: 242 m asl

Site Type: Lithic Debris Scatter

Soil Type: Nolin silt loam

Component(s): Unknown Prehistoric

Recommendation: Potentially Eligible

This site is a lithic debris scatter located near the northeast margin of a Miller Formation T5 terrace south of Roubidoux Creek (Figure B1). The site is situated on a gradual slope of the terrace. Plantation pines cover the terrace, with an understory of scrubby deciduous trees. Surface visibility was near zero due to pine needles and other forest debris. There was no surface evidence of disturbance.

Based on the distribution of positive posthole tests, the site was defined as 20 m north-south by 60 m east-west (Figure 26). Eight of the 11 posthole tests excavated within the site boundaries were positive, with lithic debris recovered to 40 cm below surface. In all, 23 artifacts were recovered from the posthole tests, representing a wide range of lithic reduction categories, including primary, secondary, tertiary, bifacial thinning, and broken flakes (Table 5). The A horizon, a dark brown silt loam, extends to approximately 25 cm below surface. The B horizon is an orange brown sandy clay loam with abundant gravel and larger clasts. The terrace sediments were found to contain a high percentage of gravel from the surface downward. Artifacts were recovered in the A horizon, in either the A or B horizons, and in the B horizon, to 40 cm below ground surface (Table 5). Based on the relatively undisturbed nature of the site and the presence of artifacts below the A horizon, it is considered to be potentially eligible for NRHP listing. Phase II investigations should be conducted to determine its eligibility. The Phase II investigations should include topographic mapping of site boundaries, determining if intact features are present by means of test unit excavations, and on recovering diagnostic artifacts and floral and faunal remains (if possible).

Site Number: 23PU658 (95-45: AOS 111)

USGS Quadrangle: Waynesville 7.5'

Elevation: 242 m asl

Site Type: Lithic Debris Scatter

Soil Type: Claiborne silt loam, 2-5 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

Site 23PU658 is located on the Miller Formation terrace, approximately 20 m south of the base perimeter fence on the Roubidoux Creek floodplain (Figure B1). This location is 100 m west of a small gully that runs northward through the terrace to join Roubidoux Creek several hundred meters to the north. Vegetation consists of pine forest with a scrubby understory of deciduous trees. Surface visibility is less than 25 percent.

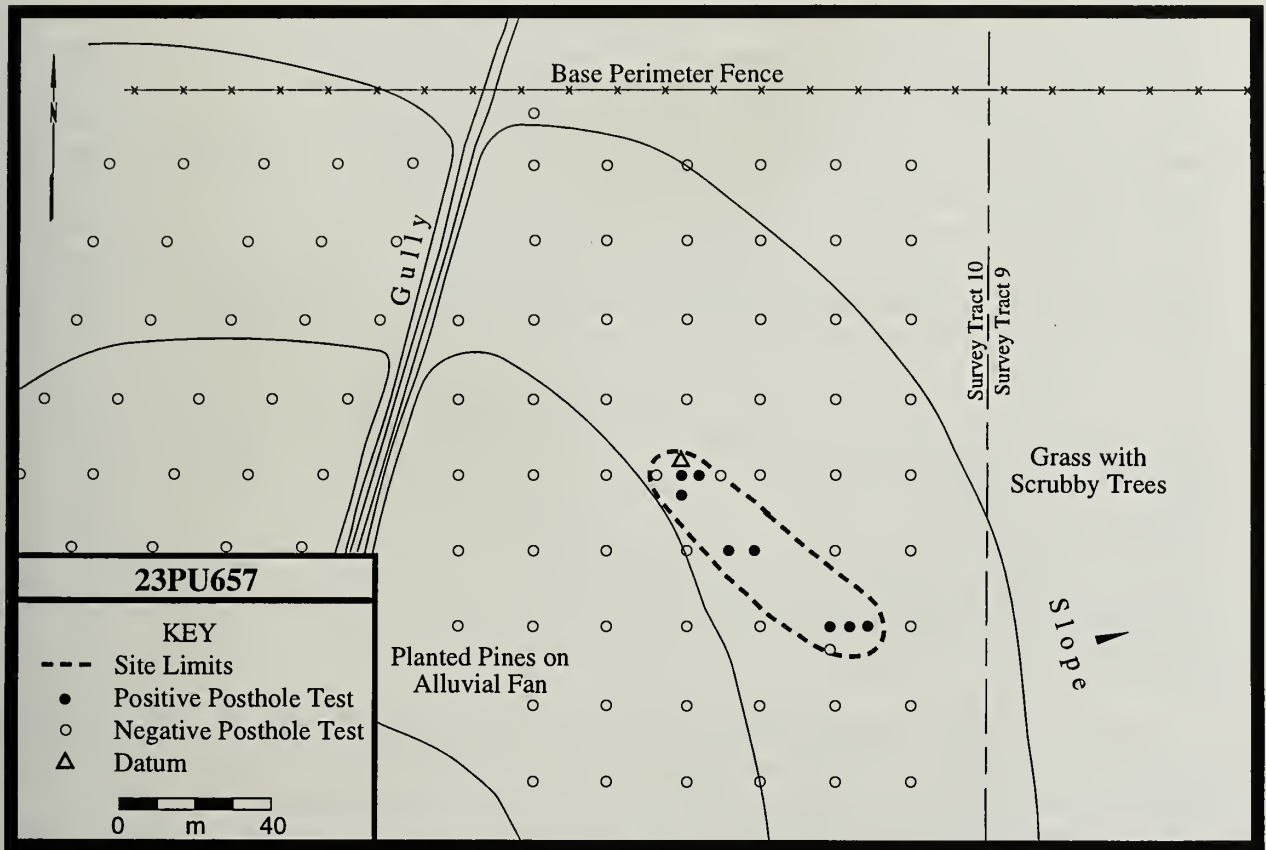


Figure 26. Sketch Map of 23PU657.

Table 5. Distribution of Artifacts Collected from 23PU657.

<i>Soil Horizon</i>	<i>Depth of Artifacts</i>	<i>Number of Artifacts</i>
A	0–30 cm	14
B	30–40 cm	2
Uncertain	0–40 cm	7

The site area consists of a single positive posthole test (Figure 27). Additional bracketing tests placed at 5-m intervals from the positive test all proved negative, and no artifacts were visible on the surface. Surrounding posthole tests on the 20-m grid also were negative. The soil profile at this location shows a 30-cm thick dark brown sandy silt loam Ap horizon (plow zone) over an orange brown sandy loam B horizon. Five artifacts were found in the one positive test. These include four tertiary flakes and one secondary flake. Two of the tertiary flakes are utilized. All were recovered from the initial 20 cm of the plow zone. Soil profiles indicate the location is plowed, and all materials were recovered from the plow zone. This location is recommended as ineligible for the NRHP based on the limited number of artifacts recovered and the impacted integrity of the location due to agricultural disturbance. No additional investigations are recommended.

Site Number: 23PU659 (95-45: AOS 112)

USGS Quadrangle: Waynesville 7.5'

Elevation: 245 m asl

Site Type: Lithic Debris Scatter

Soil Type: Claiborne silt loam, 2-5 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

23PU659 is a lithic debris scatter located on the Stone Mill Formation T7 terrace, 40 m south of Roubidoux Creek (Figure B1). The oval-shaped site covers an area 15 m north-south by 32 m east-west and is situated about 40 m east of the gully that bisects the terrace (Figure 28). The site is within plantation pines, with a mixed understory of deciduous trees. No ground surface visibility was present at the time of the survey.

Five positive posthole tests were excavated within the site limits. The tests indicate the presence of an Ap horizon (plow zone) extending to approximately 27 cm below surface. This horizon is a dark brown silt loam that is more than 35 percent gravel. The underlying B horizon is a gravelly (greater than 35 percent) orange brown silt loam. The surficial deposits on this terrace formation include post-Pleistocene loess mixed and reworked with colluvium and slope wash, deposited over the older strath terrace sediments (Albertson et al. 1995).

Lithic debris, recovered to 30 cm below surface, consists of two tertiary flakes, two broken flakes and one piece of block shatter. No material was found on the surface. Based on disturbances due to either agriculture or tree planting, it appears that the site lacks intact deposits. Based on this lack of integrity, 23PU659 is considered not eligible for listing on the NRHP. No additional work is recommended.

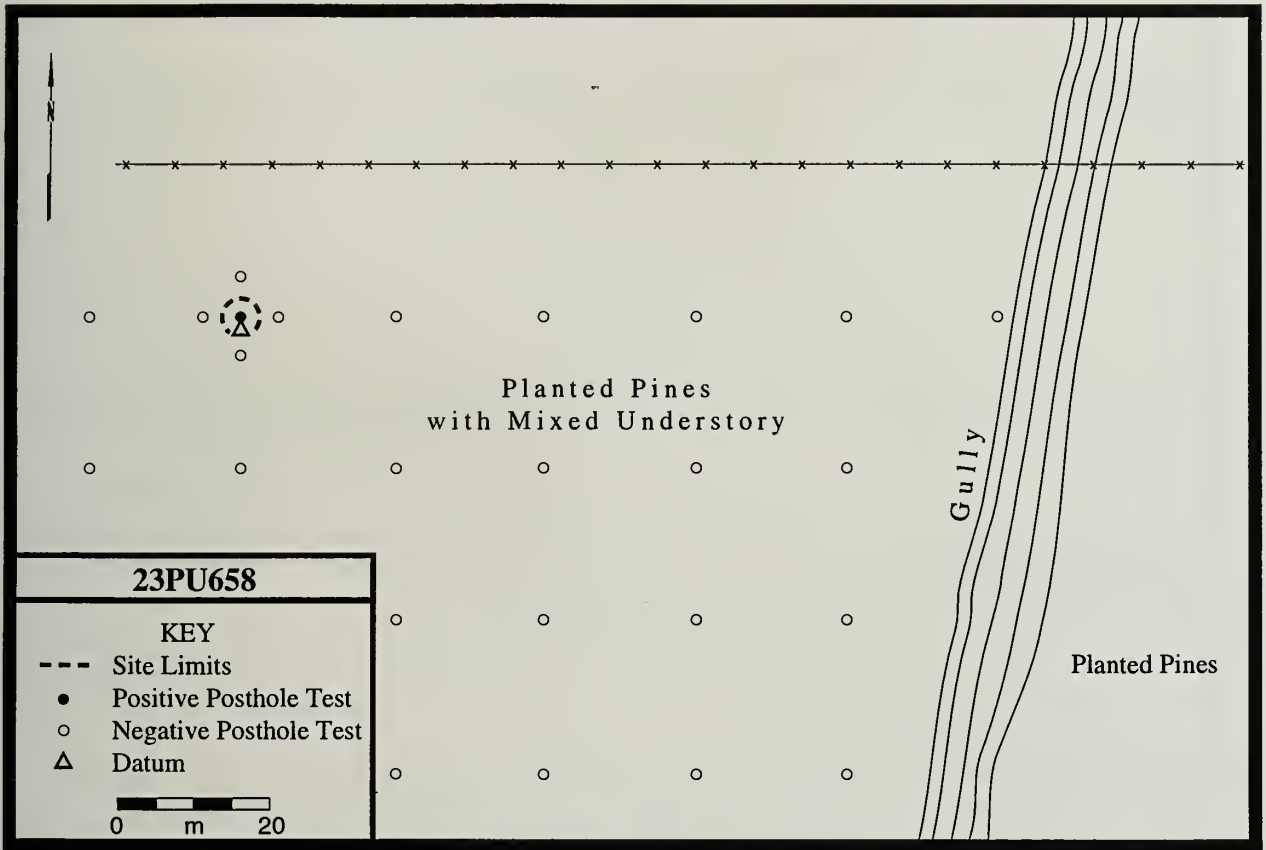


Figure 27. Sketch Map of 23PU658.

Site Number: 23PU660 (95-45: AOS 113)

USGS Quadrangle: Waynesville 7.5'

Elevation: 247 m asl

Site Type: Lithic Debris Scatter

Soil Type: Claiborne silt loam, 2-5 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Potentially Eligible

23PU660 is a lithic debris scatter located on the highest point of a T7 terrace east of a north-trending gully that drains the uplands south of the Roubidoux Creek floodplain (Figure B1). The site is 100 m west of an unnamed intermittent drainage of Roubidoux Creek. It is situated within a pine plantation with little surface visibility. The maximum dimensions of the somewhat oval site are 30 m north-south by 40 m east-west, based on the distribution of 22 positive posthole tests (Figure 28). 23PU660 is about 30 m north of the east-west gravel road that enters the Roubidoux valley from the west, and 60 m south of 23PU659. There is no surficial evidence of disturbance.

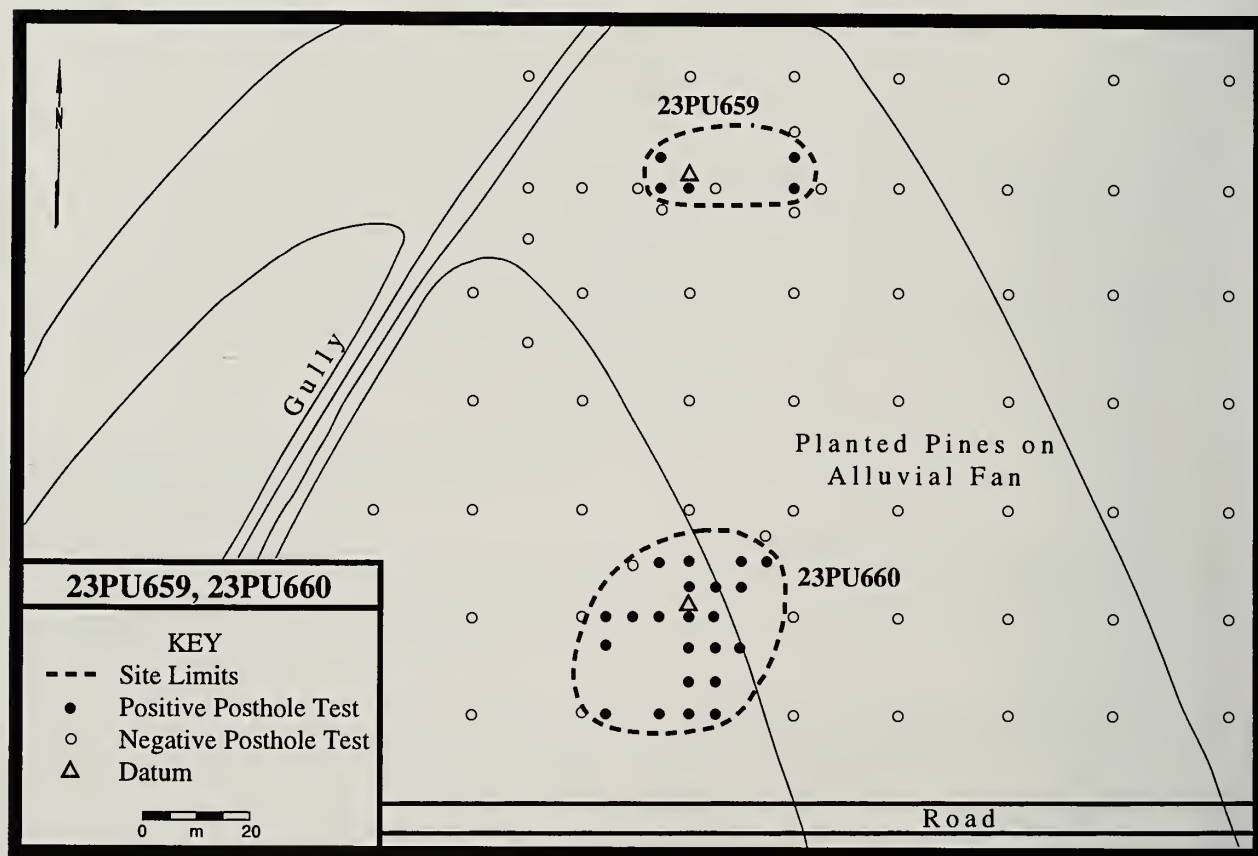


Figure 28. Sketch Map of 23PU659 and 23PU660.

The 22 positive posthole tests yielded material to 40 cm below surface. Soil profiles from the posthole tests and a single bucket auger test indicate that intact soil horizons are present below the plow zone. In general, the soil profiles document an Ap-E-B soil horizon sequence. The Ap horizon (plow zone) varies between 20 and 30 cm in depth and is a yellowish brown to brown silt loam. The underlying E horizon, between 10 and 20 cm thick, is a brown silt loam. Both the Ap and E horizons contain abundant gravels. The transitional EB/BE horizon is dark yellowish brown silty clay loam, with gravel and pebbles, extending from 40 to 50 cm in depth, over the dark reddish brown silty clay loam Bt horizon. Lithic debris was recovered to 30 cm below surface in both the Ap and E horizons (Table 6). A total of 84 artifacts was recovered from the 22 positive tests and includes a wide variety of flake categories (secondary, tertiary, bifacial thinning, bipolar, and broken), a biface tip fragment, and a rough biface fragment. The assemblage represents both initial and later stages of tool manufacture.

Given the presence of an intact E horizon with cultural deposits beneath the modern plow zone, and the relatively dense concentration of material, this site is considered to be potentially eligible for NRHP listing. Phase II testing of 23PU660 is recommended to determine its eligibility for the NRHP. Investigations should focus on mapping of site boundaries, determining whether intact features are present, and on recovering diagnostic artifacts and floral and faunal remains.

Table 6. Distribution of Artifacts Collected from 23PU660.

<i>Soil Horizon</i>	<i>Depth of Artifacts</i>	<i>Number of Artifacts</i>
A	0-20 cm	56
A/E	20-30 cm	19
E	30-40 cm	9
B	below 40 cm	0

Site Number: 23PU664 (95-45: AOS 126)

USGS Quadrangle: Waynesville 7.5'

Elevation: 314 m asl

Site Type: Lithic Debris Scatter

Soil Type: Doniphan very cherty silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This site is located in the uplands at the crest of a east-trending ridge south of Roubidoux Creek (Figure B1). The site is in a relatively flat area between two branches of an intermittent stream that empties into the Roubidoux Creek valley, 700 m to the east. The closest unnamed intermittent stream is 200 m to the east. The site is 100 m east of 23PU319 and 40 m south of a man-made pond. The entire site area is covered with oak forest, yielding no surface visibility. There is extensive evidence for recent disturbance by logging activities in the form of cut and fallen trees, stump removal, and bulldozing for road access and staging areas.

Nine posthole tests, four of which were positive, were excavated within the limits of this site. Based on the four positive tests, a site area 20 m in diameter has been defined (Figure 29). Site stratigraphy consists of a 10-cm thick Ap horizon (plow zone) and an intact E horizon to 20-25 cm below surface, underlain by the B horizon. Lithic debitage was recovered in the upper 20 cm of four posthole tests. The seven artifacts consist of bipolar, tertiary and broken flakes. Of the seven flakes, five were recovered from the Ap horizon and two from the E horizon. This site is recommended as ineligible for the NRHP based on the limited amount of artifacts found in intact deposits and the adverse impact caused by past plowing and logging activities. No additional work is recommended.

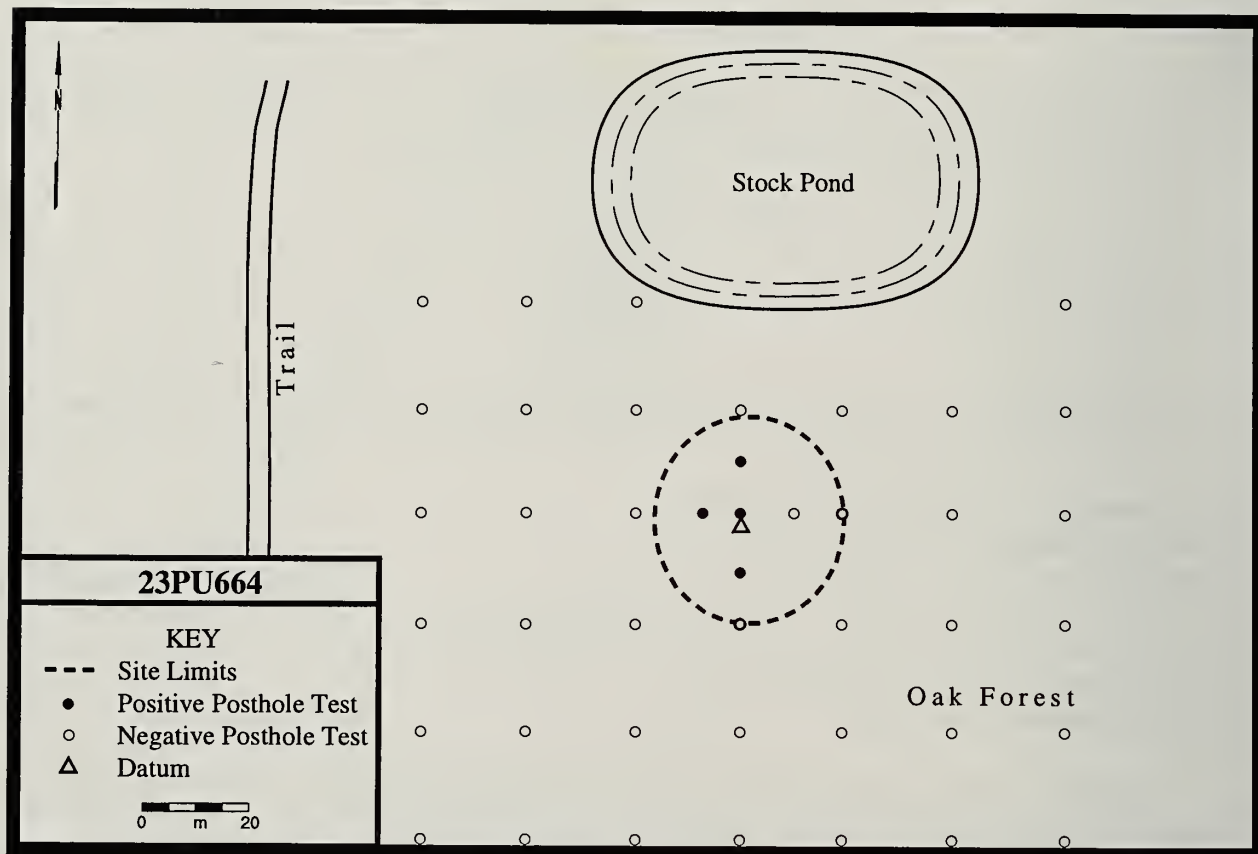


Figure 29. Sketch Map of 23PU664.

Site Number: 95-45: AOS 108

USGS Quadrangle: Waynesville 7.5'

Elevation: 240 m asl

Site Type: Isolated Find

Soil Type: Nolin silt loam

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This isolated find consists of a single chert flake from a posthole test excavated on the Roubidoux Creek floodplain (Figure B1). The creek is located 60 m to the north. Vegetation in the area consisted of grass and scrub; there was no surface visibility. A utilized secondary flake was recovered from a single posthole test at 20-30 cm below surface. The find is located at the edge of a T4 terrace, immediately south of a 2-m drop in elevation from the surface of a T2 terrace (Figure 30). This location is slightly higher in elevation than the surrounding T4 terrace surface. Four additional posthole tests were excavated at 5-m intervals from the initial positive test; all were negative. Surrounding tests on the 20-m grid also were negative. The soil profile at this location indicates a light grayish brown silt loam Ap horizon (plow zone) extending to approximately 18 cm, underlain by yellowish brown silt

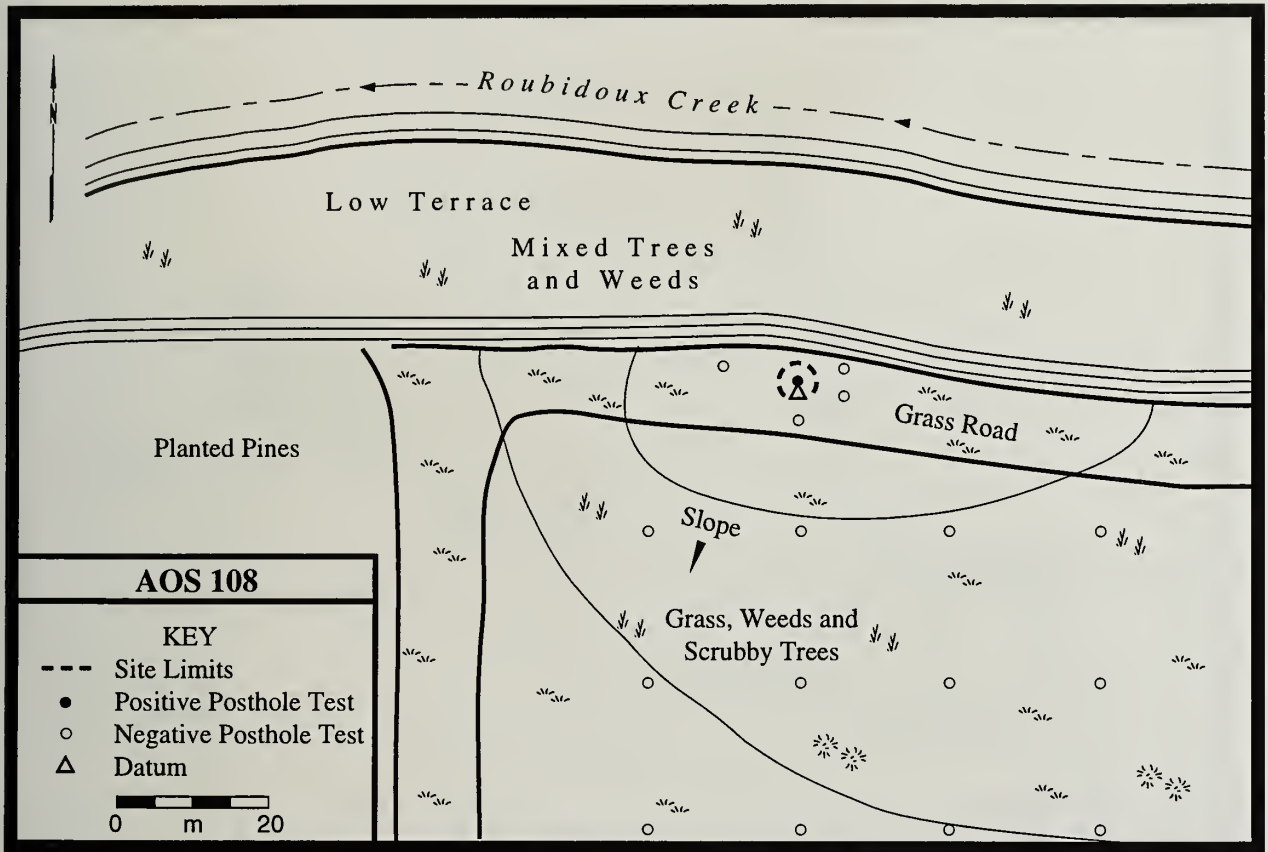


Figure 30. Sketch Map of 95-45: AOS 108.

loam. Given that only one artifact was recovered, the find does not appear to be eligible for listing in the NRHP. No further work is recommended.

Site Number: 95-45: AOS 110

USGS Quadrangle: Waynesville 7.5'

Elevation: 241 m asl

Site Type: Isolated Find

Soil Type: Claiborne silt loam, 2-5 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

95-45: AOS 110 is an isolated find, located approximately 40 m west and 60 m north of 23PU657 (Figure B1). The area is covered with pine forest and a mixed understory. There was no surface visibility. An unnamed drainage of Roubidoux Creek is located 20 m to the west. One bifacial thinning flake was recovered from a posthole test placed approximately 20 m east of a narrow gully trending to the north (Figure 31). The flake was recovered between 20 and 30 cm below surface. Four

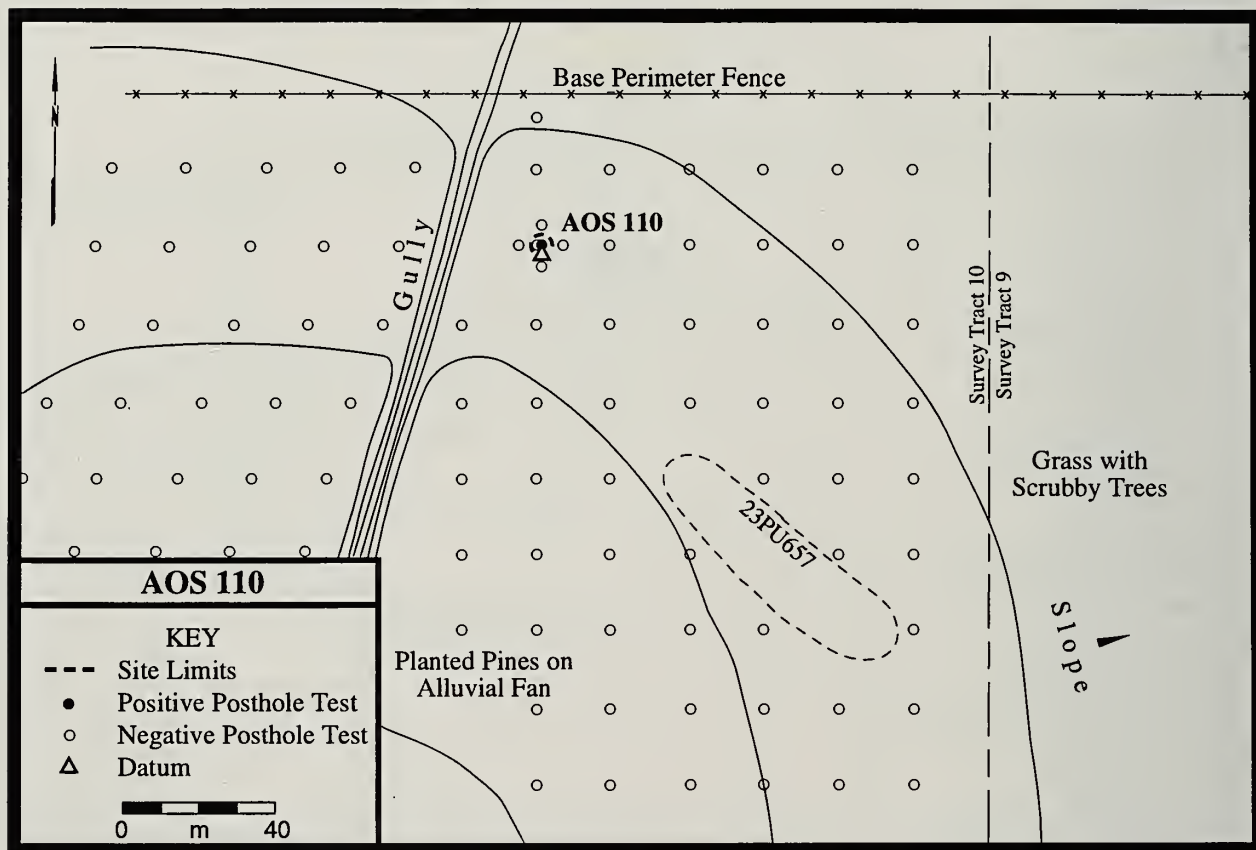


Figure 31. Sketch Map of 95-45: AOS 110.

additional posthole tests placed at 5-m intervals around the positive test were negative. The surrounding posthole tests on the 20-m grid also were negative. Given that only one nondiagnostic artifact was recovered, the find is not considered eligible for listing in the NRHP. No further work is recommended.

Site Number: 95-45: AOS 149

USGS Quadrangle: Waynesville 7.5'

Elevation: 280 m asl

Site Type: Isolated Find

Soil Type: Gepp-Rock outcrop complex, 35-60 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

95-45: AOS 149 is an isolated find located on a steep, rocky slope, approximately 260 m south of the northern base perimeter and 320 m north of Roubidoux Creek (Figure B1). A single nonhafted biface fragment was recovered from the surface at this location (Figure 32). Vegetation is sparse

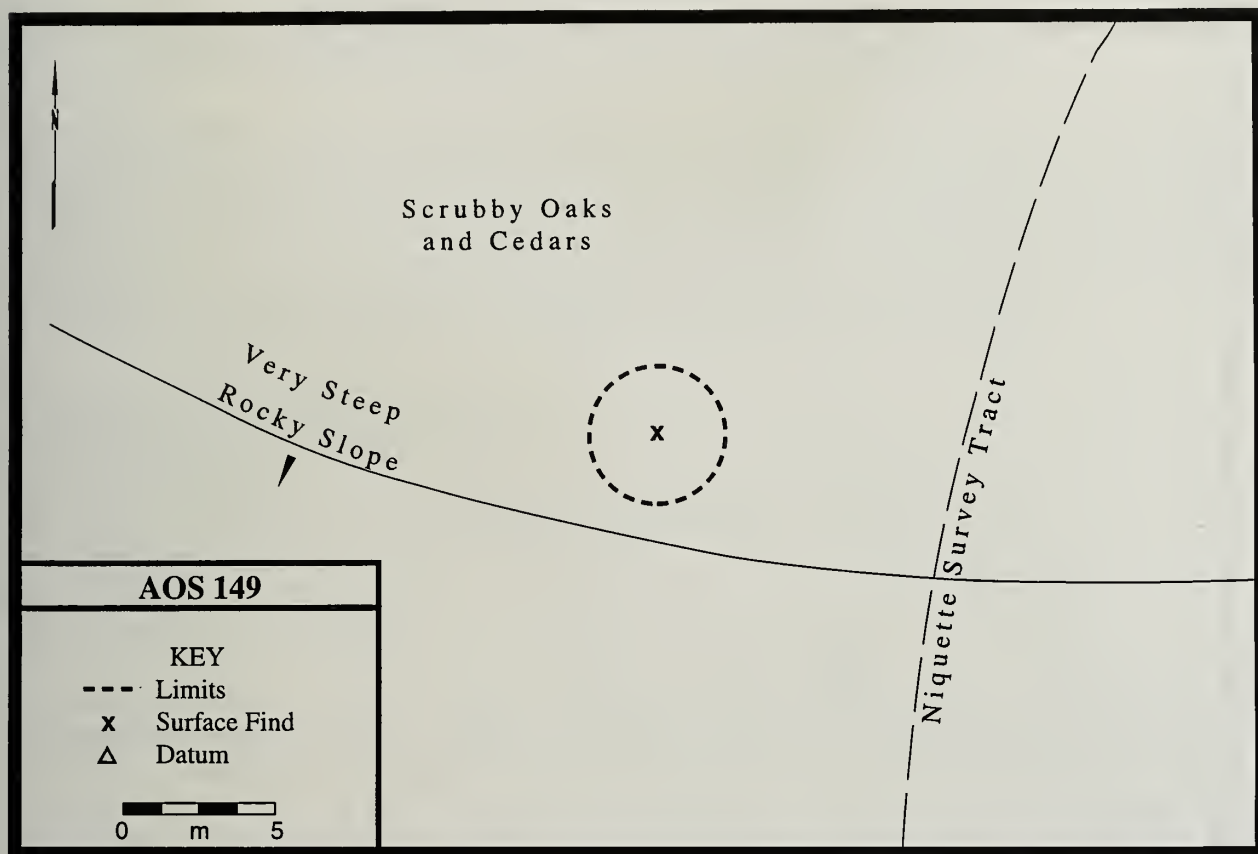


Figure 32. Sketch Map of 95-45: AOS 149.

scrubby oaks and small cedars. Surface visibility ranged between 60 and 100 percent, with loose gravel and bedrock at surface. Inspection of the ground surface failed to locate additional material. As an isolated find, this location is not considered to be NRHP eligible. No additional work is recommended.

Site Number: 95-45: AOS 150

USGS Quadrangle: Waynesville 7.5'

Elevation: 255 m asl

Site Type: Isolated Find

Soil Type: Claiborne silt loam, 5-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

95-45: AOS 150 is an isolated find located approximately 100 m west of an intermittent creek draining the uplands south of Roubidoux Creek, and 35 m east of a gravel road that enters the valley from the west (Figure B1). A single secondary chert flake was recovered from between 0-20 cm below surface in a posthole test at this location (Figure 33). Four bracketing tests placed at 5-m intervals from

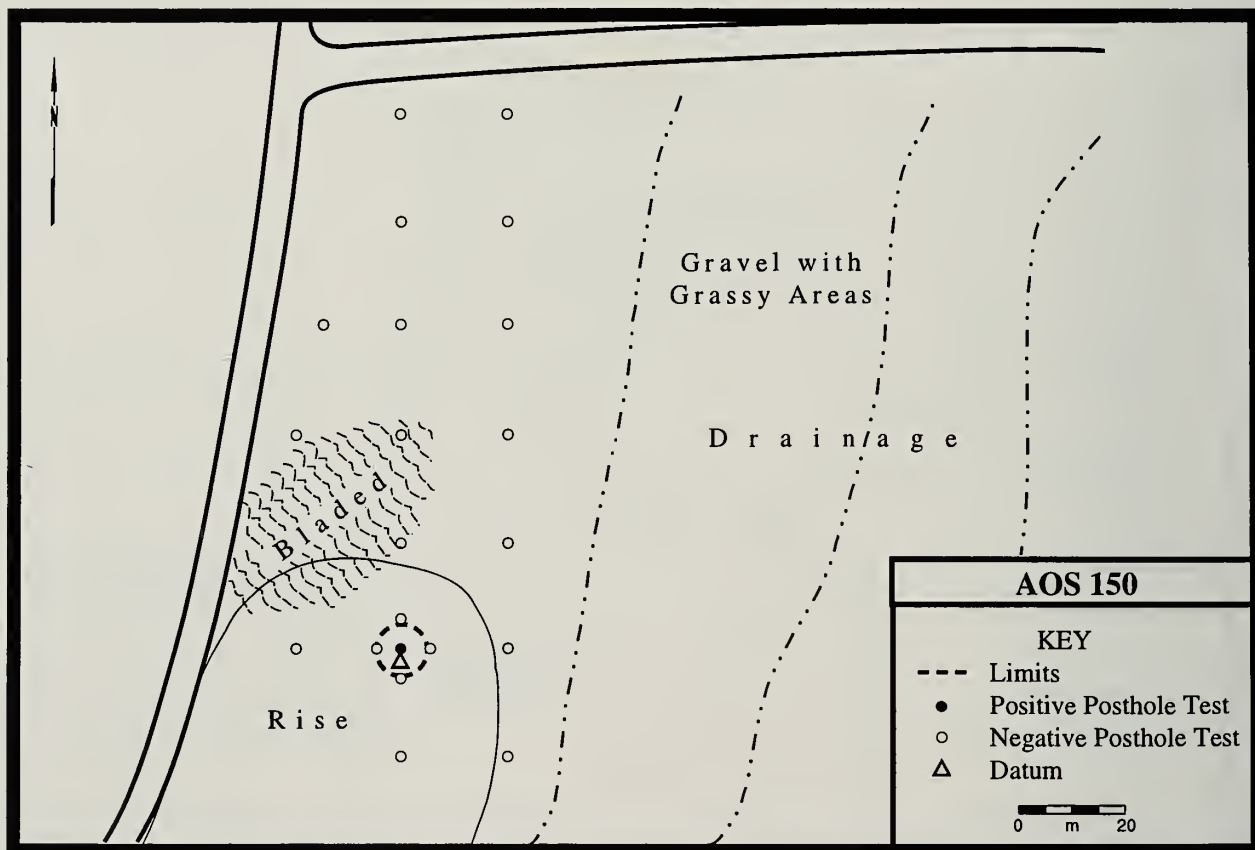


Figure 33. Sketch Map of 95-45: AOS 150.

the initial positive test all were negative, as were the posthole tests on the 20-m grid. Vegetation in the area consists of scrub vegetation and grass, providing no surface visibility. As a nondiagnostic isolated find, this location is not NRHP eligible. No additional investigations are recommended.

Site Number: 95-45: AOS 101
USGS Quadrangle: Waynesville 7.5'
Elevation: 244 m asl
Soil Type: Nolin silt loam
Location Type: Isolated Find
Component(s): Unknown Prehistoric
Recommendation: Not Eligible

This isolated find was found on a Roubidoux Creek terrace 200 m east of the current confluence of Roubidoux Creek and Smith Branch (Figure B1). Infilled creek channels are present both north and south of the find location. The area surrounding this isolated find has a mixture of grasses and briars with some trees, yielding no ground surface visibility. A gravel road, oriented north-south, is

approximately 100 m east of the posthole test location. The area between the isolated find and the road has been extensively disturbed by earthmoving, with several push piles present.

A single tertiary flake was found between 20 and 30 cm below ground surface in one posthole test (Figure 34). Four supplementary posthole tests were excavated, in cardinal directions, 5 m from the positive test. Surrounding tests on the 20-m grid also were negative. The posthole test profiles indicate that this location has been plowed to a depth of 35 cm, and the flake is from a plow-disturbed context. This isolate is recommended as ineligible for the NRHP given that only one nondiagnostic artifact was recovered from a disturbed context. No additional investigations are recommended.

Site Number: 95-45: AOS 130

USGS Quadrangle: Waynesville 7.5'

Elevation: 309 m asl

Soil Type: Doniphan very cherty silt loam, 3-9 percent slopes

Site Type: Isolated Find

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This isolated surface find was located 120 m northeast of an unnamed drainage of Roubidoux Creek (Figure B1). It is located on a southwest-trending slope that is covered with oaks and has 35-40 percent surface visibility. A single secondary flake was located on the ground surface, 10 m west of a logging road (Figure 35). No other material was found on the surface or in the surrounding 20-m grid posthole tests. The posthole tests indicate the surrounding area has undergone erosion with the E soil horizon present at the ground surface and the B horizon within 20 cm of the current surface. This location is recommended as ineligible for the NRHP, given that only one nondiagnostic artifact was recovered and the degree of disturbance caused by erosion and logging. No additional investigations are recommended.

Site Number: 95-45: AOS 102

USGS Quadrangle: Waynesville 7.5'

Elevation: 250 m asl

Soil Type: Nolin silt loam

Site Type: Isolated Find

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This isolated find was found on a Roubidoux Creek terrace 200 m north of Roubidoux Creek and 100 m east of the Roubidoux Creek valley bluff base (Figure B1). Infilled creek channels surround the terrace formation on which the isolated find is located. The surrounding vegetation includes a mixture of grasses and briars with some trees, resulting in no ground surface visibility. A mowed grassy field road running north-south lies approximately 20 m west of the positive posthole test location. There is evidence for earthmoving disturbance along this field road.

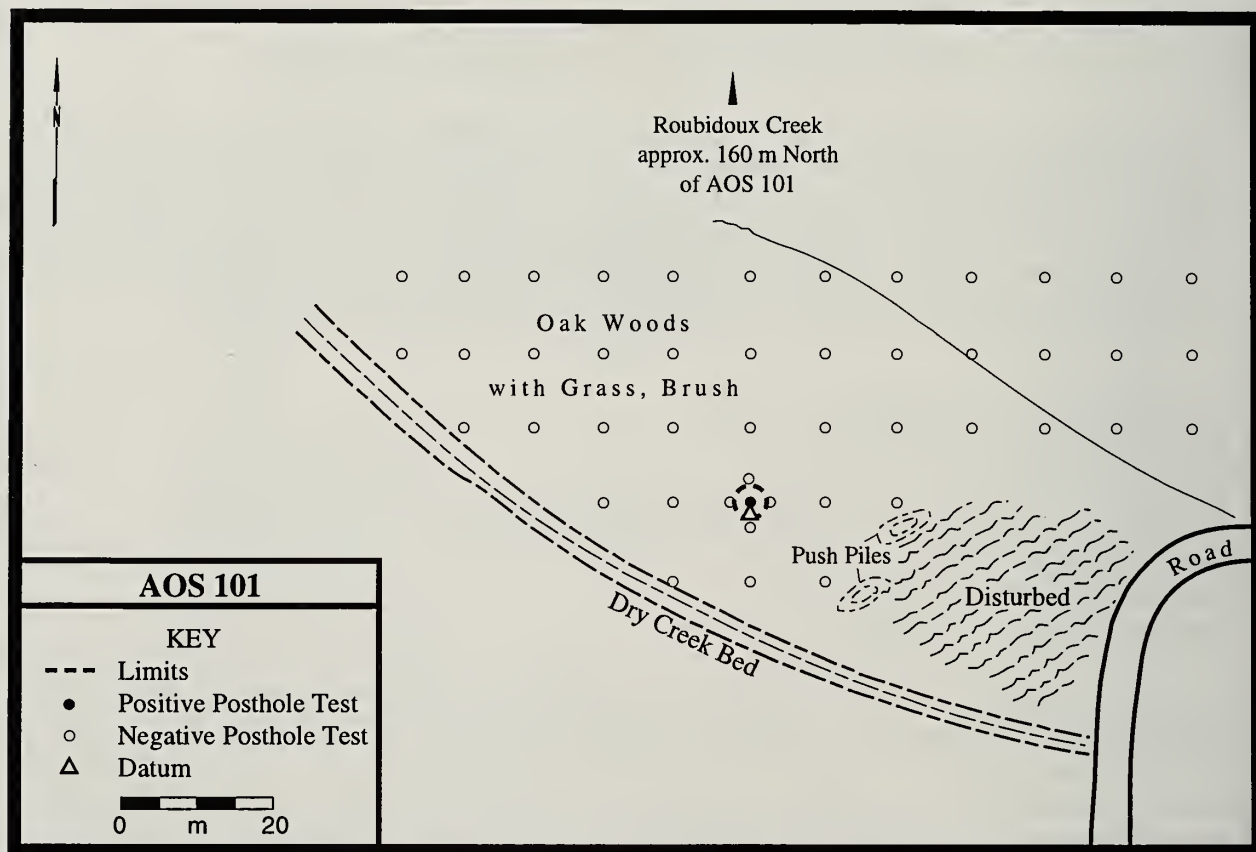


Figure 34. Sketch Map of 95-45: AOS 101.

A single pitted cobble was found between 25 and 30 cm below ground surface in one posthole test (Figures 36 and 37). Four supplementary posthole tests were subsequently excavated in the cardinal directions, 5 m from the positive test. No additional material was found either in these tests or in tests on the 20-m grid. Posthole test profiles data indicate this location has been plowed to a depth of 20 cm, with the pitted cobble recovered from an E soil horizon. This location is recommended as ineligible for the NRHP given that only one nondiagnostic artifact was recovered. No additional investigations are recommended.

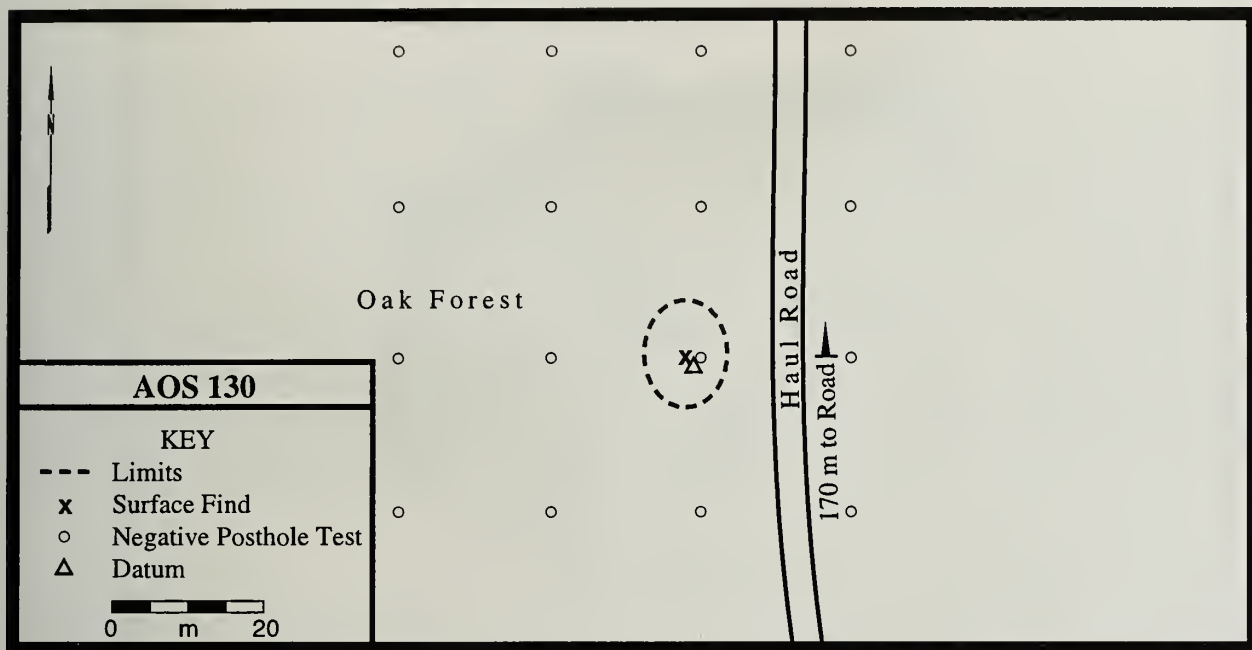


Figure 35. Sketch Map of 95-45: AOS 130.

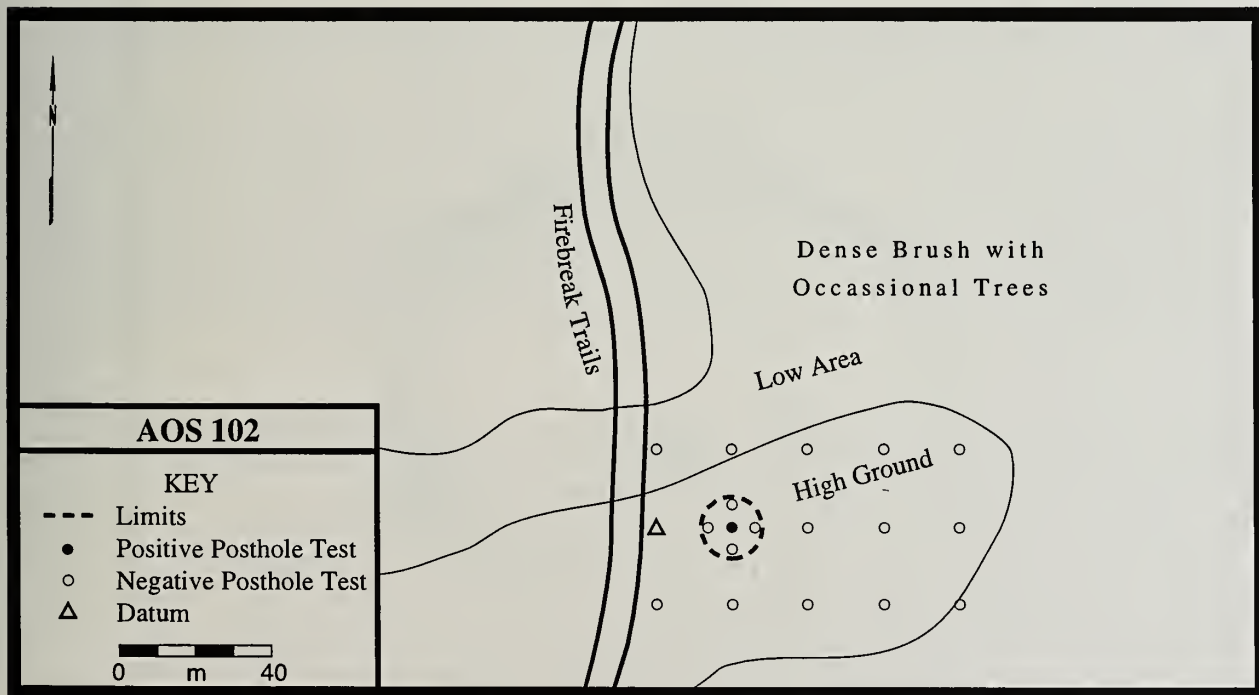


Figure 36. Sketch Map of 95-45: AOS 102.

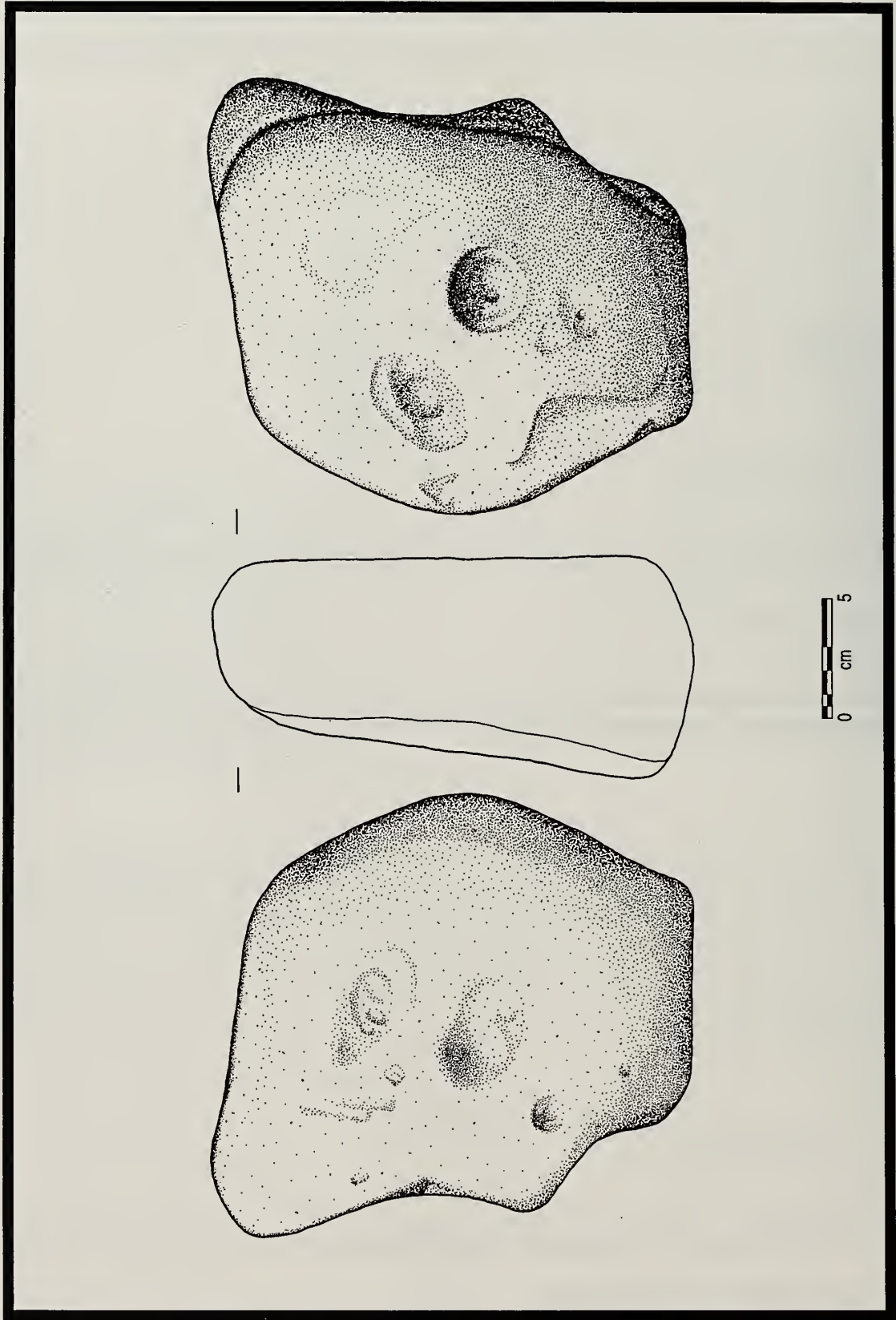


Figure 37. Pitted Cobble from 95-45: AOS 102.

The McCann Cemetery Tract

This tract measures 650 acres (263.1 ha) in size and is located in the west-central part of Fort Leonard Wood (Figure 38). Included within its limits are Hurd Hollow, which is located to the northeast and Roubidoux Creek, which flows to the south. Between these two streams is a large, dissected upland ridge. The entire tract is situated in the Upper Roubidoux cultural resource zone. The tract begins just north of McCann Cemetery along an east/west road in Section 1 of Township 34 North, Range 12 West and continues south and west into sections 2, 11 and 12. Roubidoux Creek marks part of the west and south boundaries of the tract, and a road defines the eastern boundary. The tract is dominated by large upland ridges, with a number of intermittent streams that drain into Roubidoux Creek. Several paved and gravel roads cross the tract as well. Nine sites had been recorded previously in the tract, and all but one were relocated. In addition, 21 prehistoric sites, one historic site, three multicomponent historic/prehistoric sites, and one prehistoric isolated find were identified during the survey.

Site Number: 23PU217

USGS Quadrangle: Bloodland 7.5'

Site Type: Cave

Soil Type: Gepp-Rock outcrop complex, 35–60 percent slopes

Component(s): Unknown Prehistoric

Recommendations: Potentially Eligible

This site was reported initially by Niquette et al. (1983:336–338), who suggested it might be associated with 23PU218, 23PU220 and 23PU270, all caves/rockshelters that are located nearby (see descriptions below). The cave is located in a bedrock bluff, just east of Roubidoux Creek (Figure B2). Niquette et al. (1983) arbitrarily divided the site from 23PU218. 23PU217 was described as a narrow tunnel with two entrances, both of which are difficult to access. Total usable living space was calculated at 76 m². Pothunting damage was estimated at only five percent and consisted of small holes scattered across the cave floor. Underlying bedrock was present throughout the cave, and sterile clay and decomposing rock were identified at 5–10 cm below surface in other areas. A complete surface collection was made, consisting of 76 mussel shells, eight flakes (two of which were utilized), and one graver.

The site was relocated during the current investigations (Figure 39). No further evidence of recreational or military use or looting was identified, and the site condition appears to be as initially reported to the ASM in 1982. No posthole tests were excavated, and no artifacts were collected from the surface. A datum was placed in the northern chamber of the cave. According to Niquette et al. (1983:410), the site appears to meet the NRHP eligibility criteria. Based on the unique character of the assemblage described by Niquette et al. (1983) (i.e., the dominance of mussel shell), and the relatively intact nature of deposits, this site is potentially eligible for the NRHP. Phase II testing is recommended. The Phase II investigations should focus on mapping the cave, documenting prior disturbance to archaeological deposits, determining if intact features are present through test unit excavations, and recovering diagnostic artifacts and environmental data.

BLOODLAND QUADRANGLE
MISSOURI
7.5 MINUTE SERIES (TOPOGRAPHIC)



QUADRANGLE LOCATION

KEY

..... Survey Limits



Figure 38. Location of the McCann Cemetery Tract.

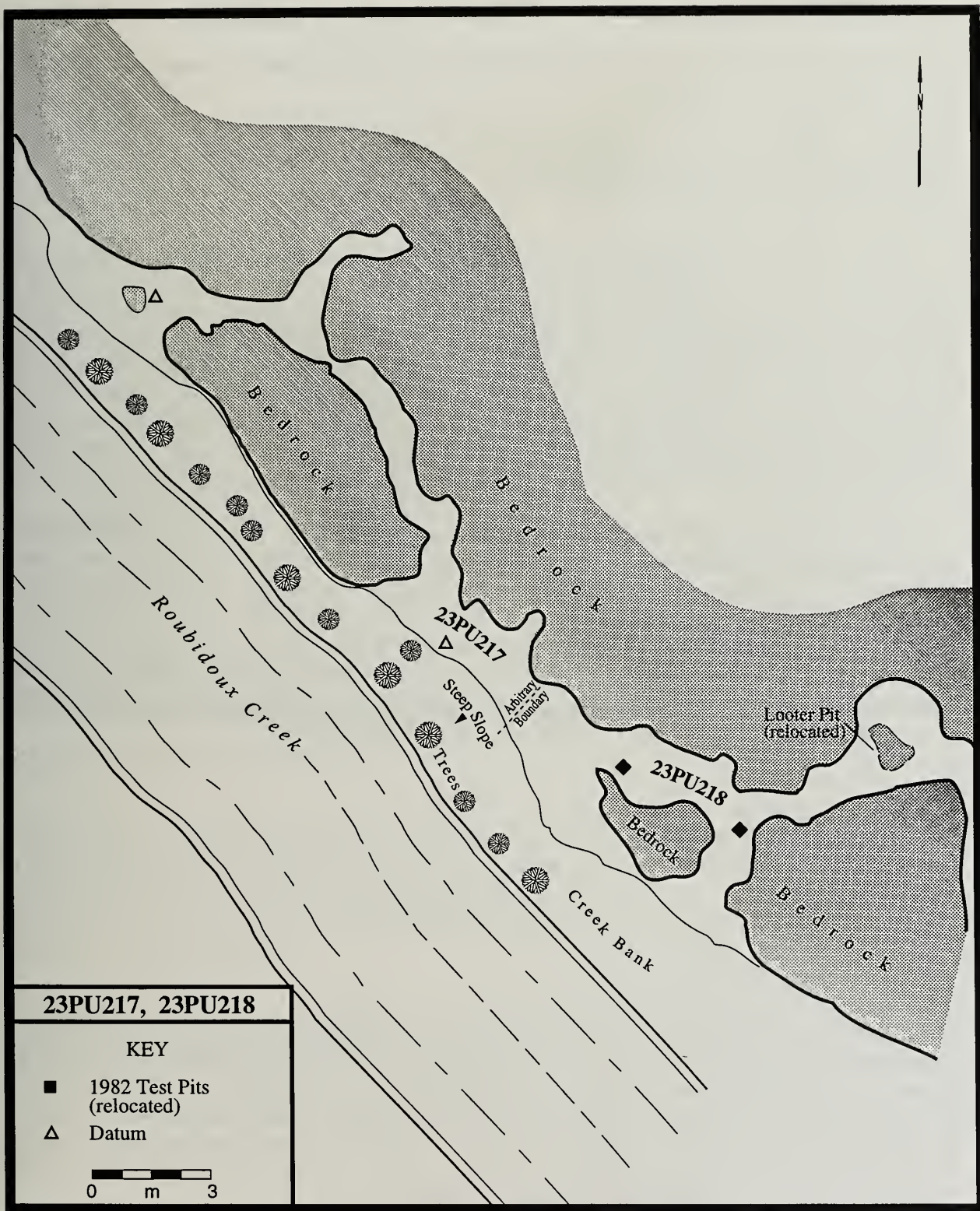


Figure 39. Sketch Map of 23PU217 and 23PU218.

Site Number: 23PU218 (Martin Cave)

USGS Quadrangle: Bloodland 7.5'

Site Type: Cave

Soil Type: Gepp-Rock outcrop complex, 35–60 percent slopes

Component(s): Late Woodland/Late Prehistoric

Recommendations: Potentially Eligible

This site also was recorded by Niquette et al. (1983:338–341), who arbitrarily separated it from 23PU217. The site is located in a bluff east of Roubidoux Creek, which is 75 m away (Figure B2). There are two entrances, one of which is only 10 m from the south entrance to 23PU217. The site consists of two chambers and sheltered edges, with a total usable area of 105 m². Niquette et al. (1983) estimate that only five percent of the site has been impacted by pothunting, although another tunnel has been heavily vandalized. Two shovel tests indicated that soil deposits are mixed. Collected materials included human remains, faunal remains, a full range of chipped-stone debris, bifaces, side scrapers, spokeshaves, utilized flakes, a pitted stone, and ceramic sherds. The ceramics and two Type 42 projectile points date the occupation to the Late Woodland and Mississippian (Late Prehistoric) periods.

This site was relocated in the present survey (Figure 39). Since no additional evidence of military, recreational or looter activity was observed, no posthole tests were excavated, and no surface collection was made. A datum was placed near the arbitrary boundary separating 23PU218 from 23PU217. Niquette et al. (1983:410) suggest that the site appears to meet the NRHP criteria. Based on the density and diversity of material collected by Niquette et al. (1983) and the limited degree of looting, Phase II testing is recommended. The Phase II investigations should focus on mapping the cave, documenting prior disturbance to archaeological deposits, determining if intact features are present through test unit excavations, and recovering diagnostic artifacts and environmental data.

Site Number: 23PU219

USGS Quadrangle: Bloodland 7.5'

Elevation: 321 m asl

Site Type: Cairn

Soil Type: Gepp-Rock outcrop complex, 35–60 percent slopes

Component(s): Late Woodland

Recommendation: Potentially Eligible

23PU219 is a prehistoric rock cairn situated at the southern tip of a narrow ridge overlooking Roubidoux Creek (Figure B2). This site was initially reported by Niquette et al. (1983:342–343) in a secondary oak-hickory forest. The cairn was identified on a narrow ridge east of Roubidoux Creek. It measured 5.5 m in diameter. At least 25 percent of the cairn had been damaged by looting and use as a walled foxhole, which had removed one edge. Niquette excavated one-quarter of the cairn and found it to be composed almost entirely of sandstone with no internal structure. Only one secondary flake was recovered. No human remains were identified.

The site was revisited during the investigations reported here (Figure 40). The wall identified in 1982 was still present, and the cairn is about 6 m in diameter, suggesting that little additional

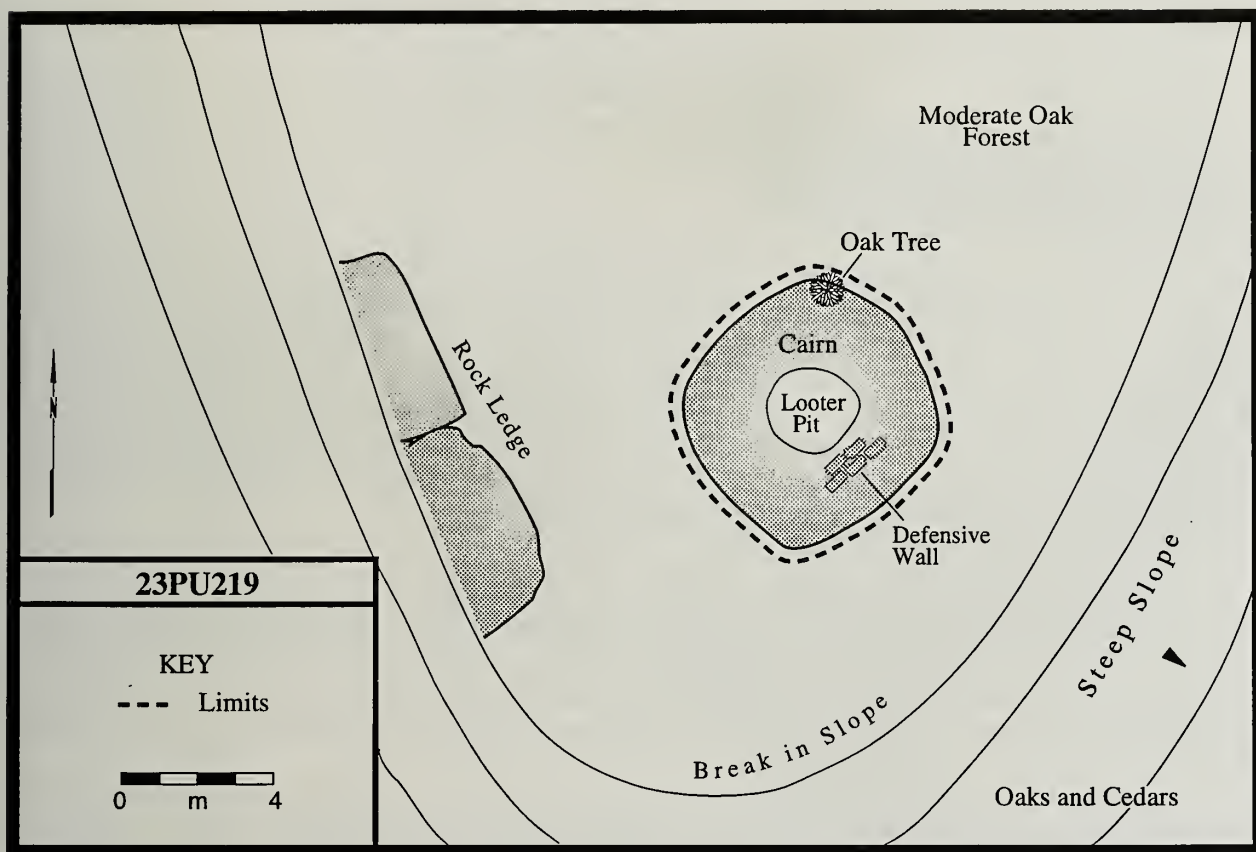


Figure 40. Sketch Map of 23PU219.

disturbance has occurred since that time. Vegetation still consists of oak-hickory forest. No artifacts or human remains were visible on the surface, and nearby posthole tests did not contain any cultural material. The position of this cairn at the edge of a ridge overlooking a major drainage is consistent with the locations of other cairns in this area and at Fort Leonard Wood. For this reason it is assigned to the Late Woodland period.

According to Niquette et al. (1983:410), the site appears to meet the NRHP eligibility criteria. As suggested above, a systematic approach to determining the eligibility of cairns should be developed. Minimally, such documentation at 23PU219 should include a review of previous fieldwork and the creation of a detailed site plan and topographic map. Once completed, the site should be formally nominated for the NRHP, either as a single site or, preferably, as part of a multiple property listing nomination.

Site Number: 23PU220

USGS Quadrangle: Bloodland 7.5'

Site Type: Cave

Soil Type: Gepp-Rock outcrop complex, 35–60 percent slopes

Component(s): Unknown Prehistoric

Recommendations: Potentially Eligible

23PU220 is located in the same bluff face to the east of Roubidoux Creek as sites 23PU217 and 23PU218, but is not physiographically connected with these two sites (Figure B2). Instead, 23PU220 opens to the west. It is 30 m from Roubidoux Creek. The site was first reported by Niquette et al. (1983:342–346). The cave was described as approximately 132 m² in size, with little surface debris. A single looter's pit was noted. A test excavation revealed faunal material and lithic debris, suggesting such occupational activities as general collecting, animal processing, bone working, and stone tool manufacture and maintenance. Based on the description of the soil profile in the report by Niquette et al. (1983:345–346), intact deposits may be present at the site.

The site was revisited in the current survey (Figure 41). Vegetation in the vicinity consists of oak-hickory forest. A possible recent looter's pit, or Niquette's shovel test, measuring approximately 1.0 m in diameter, was observed in the center of the cave chamber. One mollusc shell fragment was observed on the cave floor but was not collected. No posthole tests were excavated, and no surface collection was made. A datum was placed at the base of a tree in the center of the cave mouth.

Niquette et al. (1983:410) state that the site appears to meet the criteria from NRHP eligibility and should be nominated as part of a proposed Roubidoux Creek Archaeological District. However, the test excavations conducted at this site are poorly documented. Therefore, additional Phase II investigations are recommended to verify whether the site is, indeed, eligible for listing in the NRHP.

Site Number: 23PU241 (95–45: AOS 151–158, 160, 161, 164, 168, 171, 176, 177, 186, and 188)

USGS Quadrangle: Bloodland 7.5'

Elevation: 335 m asl

Site Type: Lithic Debris Scatter

Soil Type: Viraton silt loam, 3–9 percent slopes

Component(s): Middle Woodland/Late Woodland

Recommendation: Potentially Eligible

23PU241 is a lithic debris scatter reported to the ASM by Niquette in 1982. He described the site as a large lithic debris scatter located in a plowed wildlife food plot along a ridge crest. This location is a large upland ridge crest between Roubidoux Creek to the south and Hurd Hollow to the north (Figure B2). Roubidoux Creek, 30 m to the southwest, is the closest source of water. The dimensions of the site were recorded as 1,375 m northwest-southeast by 100 m northeast-southwest. Materials reported, but not collected, in 1982 include chert cores, pitted cobbles, grinding stones, hammerstones, bifaces, scrapers, and projectile points. Of the latter, one is described as a Snyders point and the other as a Rice Side Notched point. These two projectile points minimally date 23PU241 to the Middle and

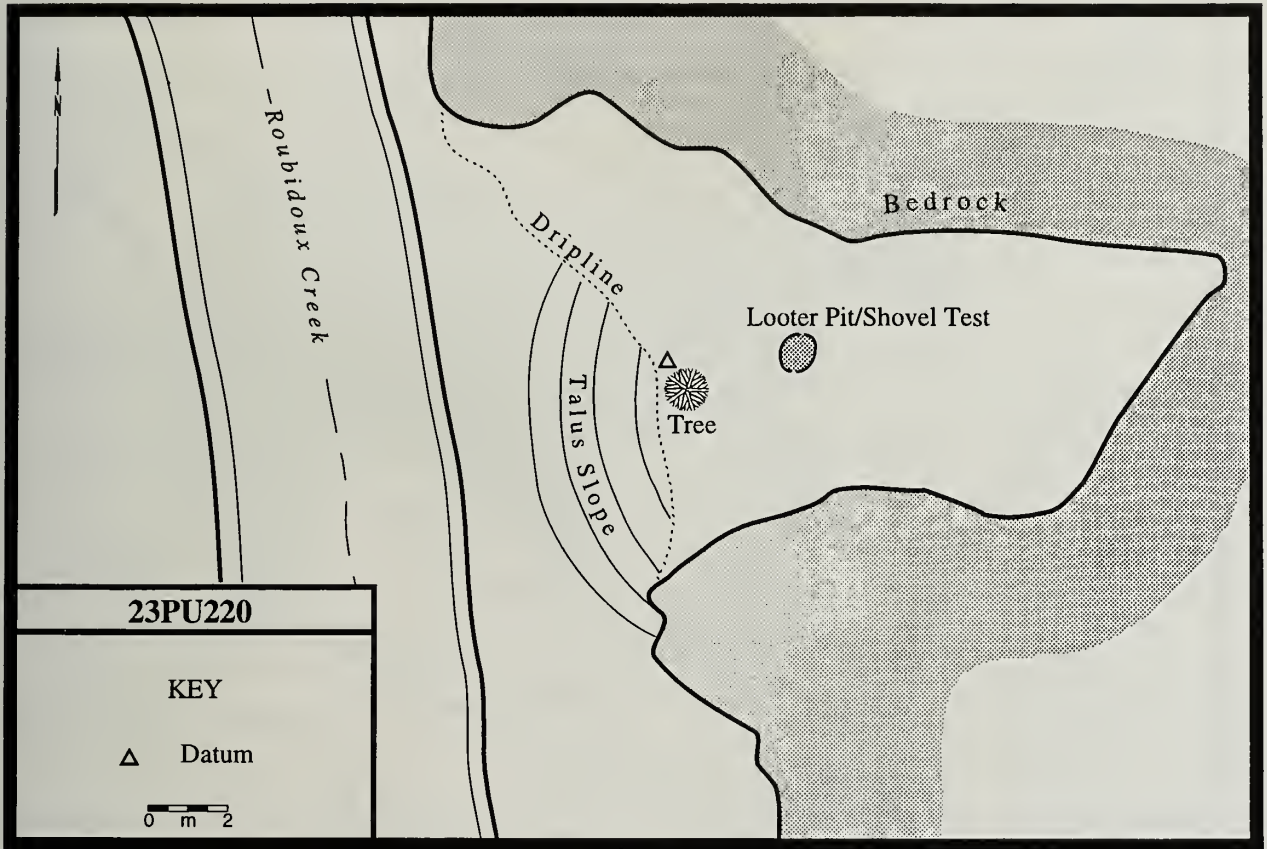


Figure 41. Sketch Map of 23PU220.

Late Woodland periods (Chapman 1975). On the original 23PU241 site form, the material scatter is described as diffuse but grouped into discrete activity areas. No mention is made of disturbance to the site.

The site was revisited during the survey reported here (Figure 42). Vegetation included oak forest with a mixed deciduous understory, grassy areas with sparse scrubby trees, and dense stands of hawthorn and oak scrub. Surface visibility ranged between 0 and 75 percent, with the highest visibility restricted to a small patch of burnt-off grass, where a number of lithic artifacts were recovered from the surface. The investigations conducted during the current project essentially reaffirmed the presence of numerous discrete areas of lithic debitage and debris within the previously defined site limits. Seventeen material concentrations were defined on the basis of the posthole tests (Figure 42). Table 7 documents the maximal dimensions of each discrete concentration, number of artifacts collected, their context, and soil stratigraphy. Artifacts recovered from each concentration are listed in Table 8. In general, soils on this landform appear to be largely disturbed by agricultural use of the ridge.

For 15 of the 17 concentrations, no additional work is recommended due to destruction of site integrity by plowing, paucity of material recovered, or both. Two of the concentrations, AOS 151 and

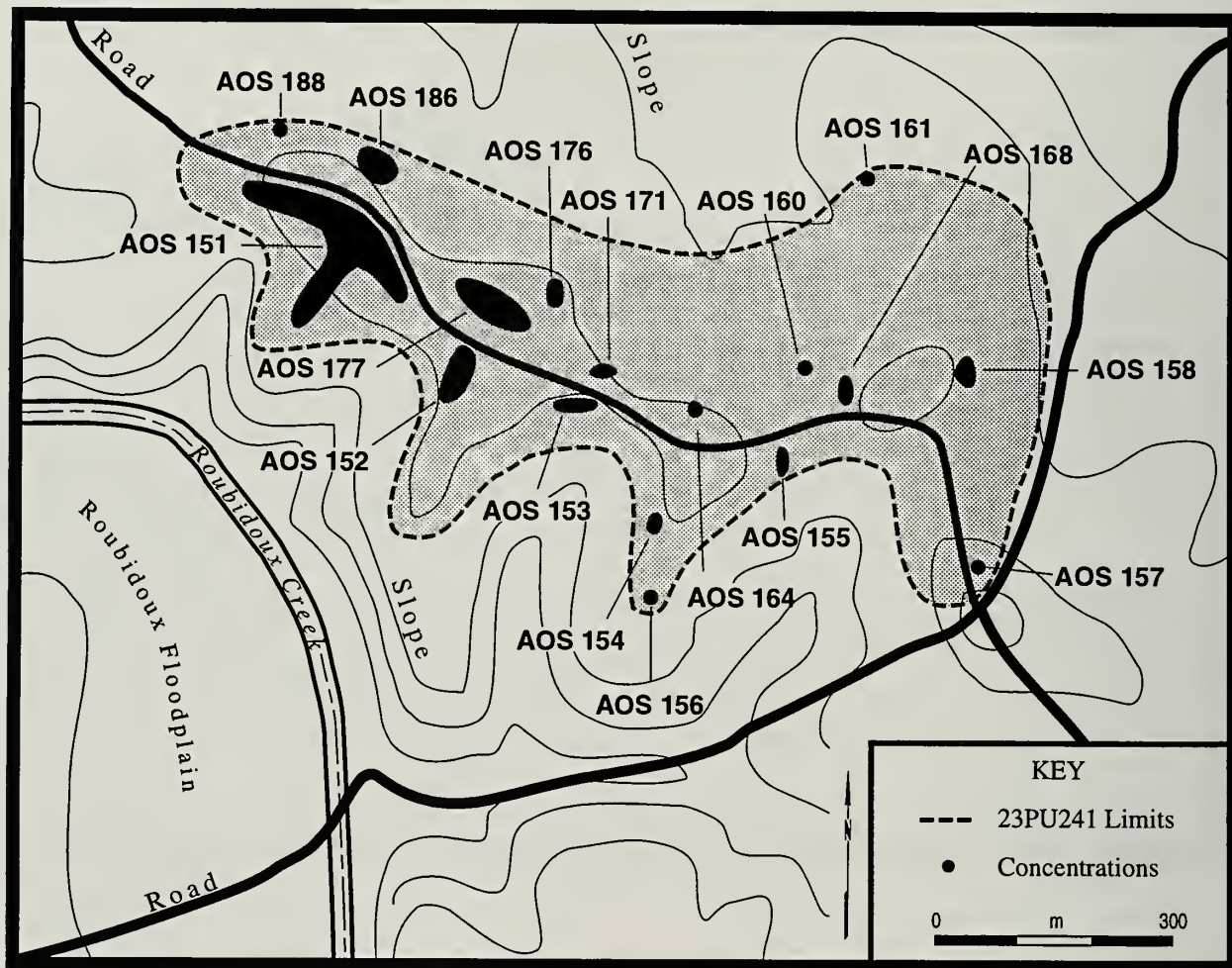


Figure 42. Sketch Map of 23PU241.

AOS 168, are potentially eligible for NRHP listing, and Phase II investigations should be conducted. Concentration AOS 151 is a roughly T-shaped concentration located at the west end of 23PU241. Twenty-eight positive postholes were excavated in this area, from which 110 artifacts were recovered. Soil stratigraphy at AOS 151 consists of an Ap horizon (plow zone), 10–20 cm thick, followed by an E or BE horizon (variably present) to 15 cm thick. Of the artifacts recovered, 80 were from the surface or plow zone, 12 from intact E or BE horizon deposits, and 17 from uncertain contexts (Table 9). AOS 168 is a small oval-shaped concentration in the east-central portion of the site area. Two positive posthole tests were excavated within this area. Soil stratigraphy here includes a 10-cm thick Ap horizon (plow zone) followed by a 10–30-cm thick E horizon. Nine artifacts were recovered from this concentration, eight of which are from the intact E horizon. Soil stratigraphy and artifact location at both concentrations suggest the potential for intact deposits. Phase II investigations are recommended, but only at concentrations AOS 151 and AOS 168. The remainder of the site area should be considered not eligible for listing in the NRHP, and no additional work is recommended in those areas.

Table 7. Summary of 23PU241 Concentration Characteristics.

<i>Concentration</i>	<i>Max. Dimensions</i>	<i>No. of Artifacts</i>	<i>Context</i>	<i>Stratigraphy</i>
AOS 151	220 m n-s x 180 m e-w	110	Surface, 28 postholes	Variable Ap-E-B
AOS 152	110 m n-s x 170 m e-w	16	5 postholes	Ap, 5-10 cm thick E, 10-25 cm thick
AOS 153	30 m n-s x 70 m e-w	14	Surface, 4 postholes	Ap, to 20 cm bs
AOS 154	60 m n-s x 40 m e-w	9	2 postholes	Ap-B All from Ap
AOS 155	70 m n-s x 10 m e-w	3	2 postholes	Ap-B All from Ap
AOS 156	isolate	2	1 posthole	Unknown
AOS 157	isolate	1	1 posthole	Ap-B
AOS 158	50 m n-s x 60 m e-w	7	3 postholes	Ap-B
AOS 160	isolate	1	1 posthole	Unknown
AOS 161	isolate	1	1 posthole	Ap-B
AOS 164	40 m n-s x 40 m e-w	3	3 postholes	Ap, 20 cm thick E, 10-30 cm thick All from Ap
AOS 168	40 m n-s x 10 m e-w	9	2 postholes	A, 0-10 cm thick E, 10-40 cm thick Flakes in E
AOS 171	20 m n-s x 40 m e-w	3	2 postholes	Variable
AOS 176	40 m n-s x 20 m e-w	7	3 postholes	Ap-B
AOS 177	80 m n-s x 140 m e-w	16	Surface, 4 postholes	Ap, 10-15 cm thick E, 10-15 cm thick
AOS 186	10 m n-s x 60 m e-w	3	3 postholes	Ap-B
AOS 188	isolate	1	Surface	Unknown

Table 8. Artifacts Collected from Concentrations at 23PU241.

Artifact Category	AOS 151	AOS 152	AOS 153	AOS 154	AOS 155	AOS 156	AOS 157	AOS 158	AOS 160	AOS 161	AOS 164	AOS 168	AOS 171	AOS 176	AOS 177	AOS 186	AOS 188
Core	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0
Primary Flake	1	2	0	0	0	1	0	1	0	0	0	2	0	0	0	0	0
Secondary Fl.	5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
Tertiary Flake	13	3	1	3	1	0	0	1	0	0	0	0	1	1	6	1	1
Bifac. Th. Fl	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Broken Flake	67	8	11	2	1(1)	1	1	4	0	0	3	4	2	5	6	0	0
Blade	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bipolar Flake	0	3	0	0	1	0	0	0	0	0	0	0	0	1	0	2	0
Block Shatter	18	0	1	1	0	0	0	1	1	0	0	3	0	0	0	0	0
Uniface	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0
Biface	1	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0
Total	110	16	14	9	3	2	1	7	1	1	3	9	3	7	16	3	1

Note: Numbers in parentheses indicate the number of utilized flakes within a flake category.

Table 9. Distribution of Artifacts Collected from Concentration AOS 151 of 23PU241.

<i>Soil Horizon</i>	<i>Depth of Artifacts</i>	<i>Number of Artifacts</i>
Surface	0	23
Ap	Variable, 10–20 cm bs	57
E/BE	Variable	12
Uncertain	Unknown	18

Site Number: 23PU270

USGS Quadrangle: Bloodland

Elevation: 320 m asl

Site Type: Cave

Soil Type: Gepp-Rock outcrop complex, 35–60 percent slopes

Component(s): Late Woodland

Recommendation: Potentially Eligible

This small cave was reported to the ASM by Niquette in 1982. It is located near the top a bluff near Roubidoux Creek, which flows 100 m to the southeast (Figure B2). The cave's dimensions are 13 m north-south by 7 m east-west. According to the ASM site form, subsurface tests indicated a possibly intact midden from which lithic debris, faunal remains, and Late Woodland ceramics were recovered. The degree of looting is not stated on the form.

The site was relocated during the current project (Figure 43). Vegetation on the slope around the cave consists of oak-hickory forest. The cave is not vegetated, and surface visibility was 100 percent. Several depressions were noted, which probably represent both looter's pits and Niquette's test excavations. A large scatter of mussel shell, apparently of recent origin, is present on the talus slope below the cave. A representative sample of artifacts was collected from the surface, including two primary flakes, two secondary flakes, one broken flake, six pieces of block shatter, two Maramec Cordmarked sherds, one Maramec Plain sherd, two dolomite/grit-tempered burnished plain sherds, and one dolomite-tempered eroded sherd. The Maramec Cordmarked sherds consist of one with Z-twist and one with S-twist cordage. Approximately 50 pieces of lithic debris and mussel shell were not collected.

Site condition does not appear to have changed since the site was first reported. Given that intact deposits may be present, Phase II evaluation is recommended. The Phase II investigations should include mapping the cave, documenting previous disturbance to archaeological deposits, determining if intact features are present, and recovering additional diagnostic artifacts and floral and faunal remains (if possible).

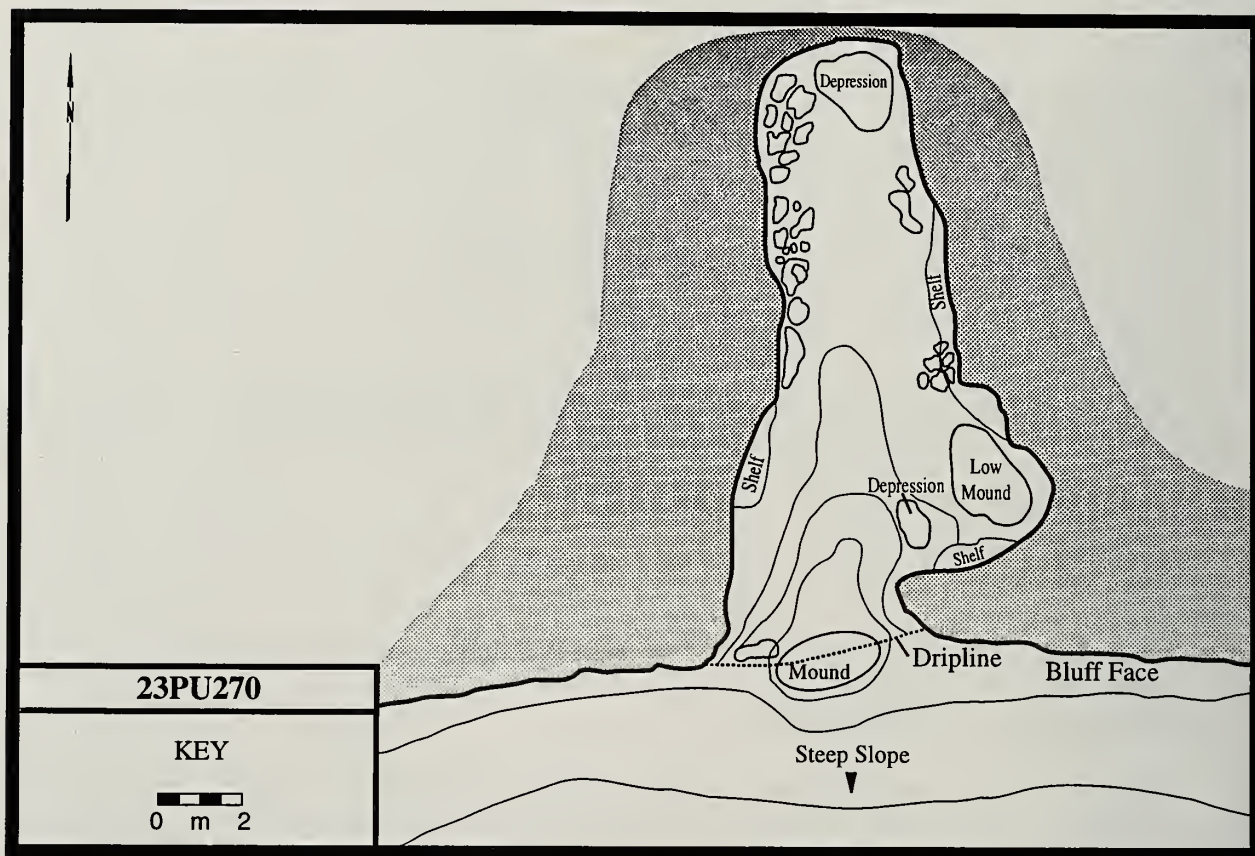


Figure 43. Sketch Map of 23PU270.

Site Number: 23PU284

USGS Quadrangle: Bloodland

Elevation: 332 m asl

Site Type: School

Soil Type: Viraton silt loam, 3–9 percent slopes

Component(s): 20th Century

Recommendation: Not Eligible

This historic school also was reported to the ASM in 1982. It consists of a partially destroyed poured-concrete foundation and two associated depressions (possibly a well and privy) in the uplands above Roubidoux Creek (Figure B2). The site measured .01 acres in size. The site was identified as Dundas School on several pre-1940 maps, but it does not appear on the 1948 Big Piney 15' quadrangle. The site was recommended as ineligible for listing in the NRHP.

The site was reidentified during the current survey (Figure 44). The area was covered with scrubby trees and dense weeds. There was no surface visibility. A combination of pedestrian reconnaissance and posthole tests resulted in relocation of the foundation, which is 40 m from both the

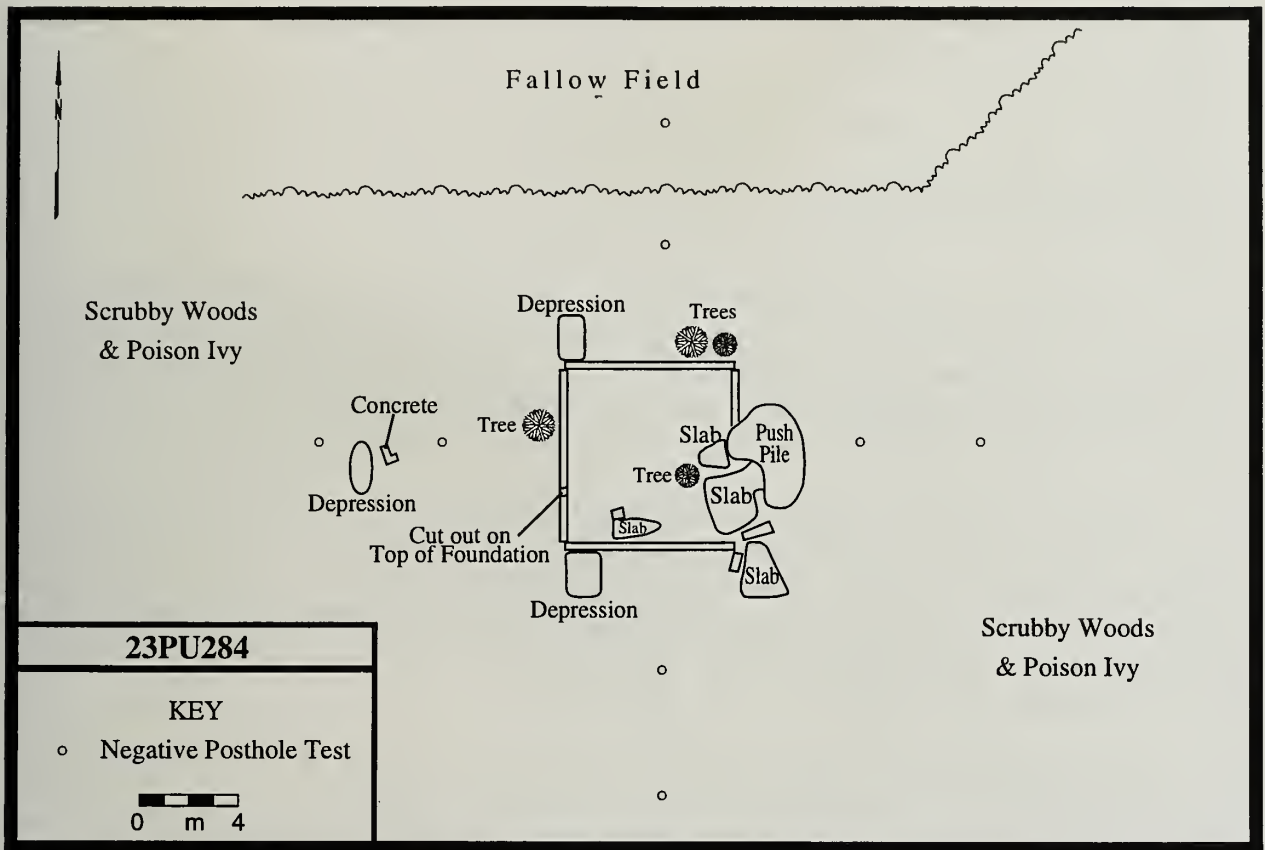


Figure 44. Sketch Map of 23PU284.

north-south and east-west roads that cross the area. The foundation is approximately 60 cm high and 22 cm side. Two depressions were noted near the southwest and northwest corners of the foundation walls. Artifacts noted on the surface, but not collected, include 25 brick fragments, one piece of glass, and one piece of military metal hardware. Posthole tests were all negative.

A description of Dundas School, written by a former student and teacher, appears in *Pictures–Stories–History of Pulaski County Rural Schools* (1990). It was a typical one-room, wood-framed schoolhouse, with first through eighth grades taught by a single teacher. There were no privies or other outbuildings. The building was rectangular, with three windows on the long sides. A wood-burning stove was located in the middle of the building, a small bookcase in a back corner, and a raised platform at the front. The school also functioned as a community center and Baptist Church, and events such as debates and tent revivals were held at the school.

Given that only the poured-concrete foundation remains and that there were no associated outbuildings, 23PU284 is unlikely to provide data to answer questions of regional historic significance. It is recommended as ineligible for listing in the NRHP, and no further work is suggested.

Site Number: 23PU285
USGS Quadrangle: Bloodland
Elevation: 287 m asl
Site Type: Lithic Tool Scatter
Soil Type: Nolin silt loam
Component(s): Late Woodland
Recommendation: Not Eligible

This lithic tool scatter was reported to the ASM in 1982. It was identified on the floodplain of Roubidoux Creek (Figure B1); according to the ASM site form, the material may have eroded from the cut bank. A lanceolate-shaped end scraper, a Rice Side Notched projectile point, and a corner-notched projectile point were recovered from an area measuring 30 m north-south by 20 m east-west. The Rice Side Notched point dates the assemblage to at least the Late Woodland period.

The area containing the scatter was investigated during the current project (Figure 45). Dense weeds, poison ivy and small trees cover the area, resulting in no surface visibility. The reported site area was postholed at 5-m intervals, but despite the intensity of coverage, no artifacts were recovered. Very silty grayish brown soil overlies alluvial gravels and sands, probably representing slope wash. The cut-bank described by Niquette also was examined, but there was no evidence of artifacts or features eroding from the bank.

It is possible that the artifacts recovered by Niquette represent the entire assemblage and that nothing remains of the site. However, it is also likely that a site may be located further up on the terrace. Since the terrace is outside the boundary of the survey tract, no investigations were made in that area. Given the lack of archaeological data, the site area defined as 23PU285 is recommended as ineligible for listing in the NRHP.

Site Number: 23PU509 (Bryun L. Christeson site)
USGS Quadrangle: Bloodland 7.5'
Elevation: 323 m asl
Site Type: Residence/Farmstead
Soil Type: Viraton silt loam, 3-9 percent slopes
Component(s): 19th/20th Century
Recommendation: Potentially Eligible

This site was reported to the ASM by Fort Leonard Wood personnel in 1994 as a late nineteenth/early twentieth century historic residence/farmstead (Figure B2). The site is located in a wooded area on a slope between a county road and Roubidoux Creek. An unnamed spring lies 50 m to the west. The site consists of a concrete and sandstone foundation measuring 10-x-10 m in size and a scatter of historic artifacts covering a 100-x-100 m area. The site is visible on 1938 and 1942 aerial photographs of the area, although it is absent on the 1948 Waynesville 15' quadrangle map.

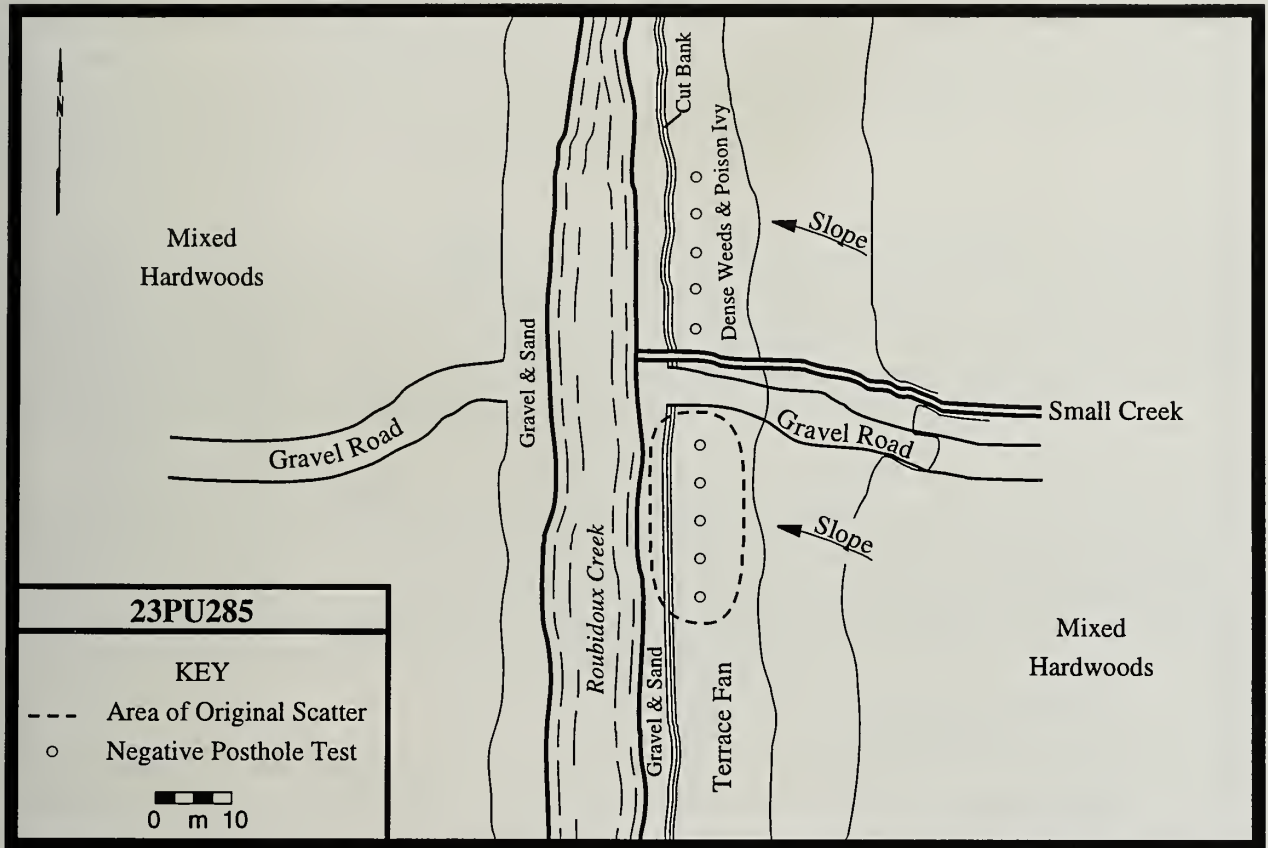


Figure 45. Sketch Map of 23PU285.

The site was revisited during the 1995–1996 field season (Figure 46). Vegetation in the area consists of oak forest with scattered small conifers and an understory of dense raspberry plants. Surface visibility did not exceed 10 percent. The sandstone and concrete foundation is still present. Also noted were a spoil pile of building material and artifacts, two small spoil piles of dirt, and a surface scatter of building material. Artifacts noted, but not collected, include five brick fragments, a metal bucket, and one milk glass canning jar lid liner embossed with "CAP".

Historic artifacts were recovered from three posthole tests to a maximum depth of 23 cm below surface. These consist of two can fragments, one piece of clear flat glass, one undecorated ironstone sherd, two undecorated whiteware sherds, one salt-glazed stoneware sherd with interior Albany slip, and one clear bottle(?) glass fragment. Although some of the site has been disturbed by earthmoving, the areas adjacent to and west of the foundation appear to be relatively undisturbed and may contain additional features.

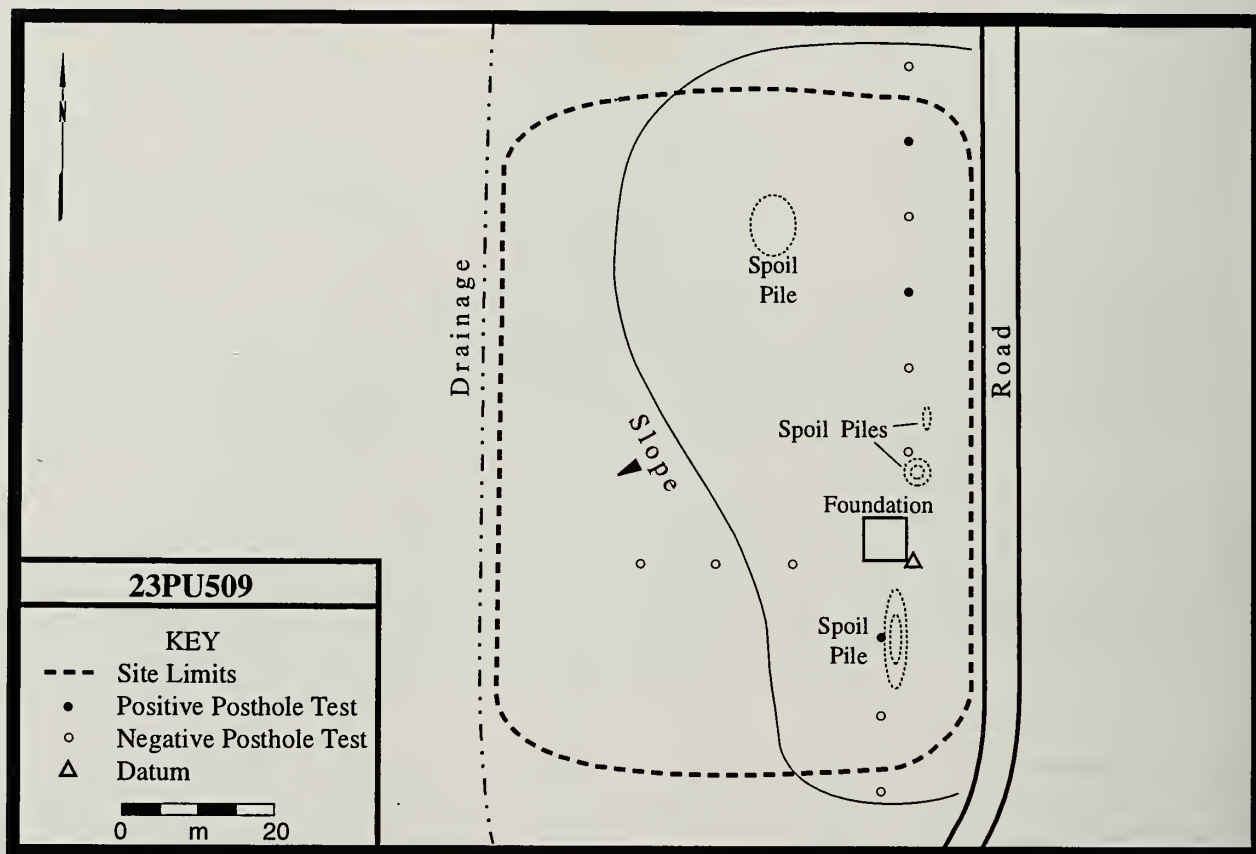


Figure 46. Sketch Map of 23PU509.

Artifacts such as whiteware and salt-glazed stoneware may indicate a post-Civil War reoccupation of this area, possibly relatively early in the middle nineteenth century. Few sites dating to this period are known at Fort Leonard Wood, and given that intact surface features are present, Phase II evaluation of 23PU509 is recommended to determine its NRHP eligibility. The Phase II investigations should include a detailed records search, a more precise definition of site boundaries, excavation to determine site function and temporal placement, and evaluation of the site within the overall context of local history.

Site Number: 23PU635 (95-45: AOS 142)

USGS Quadrangle: Bloodland 7.5'

Elevation: 293 m asl

Site Type: Rockshelter

Soil Type: Gepp-Rock outcrop complex, 35-60 percent slopes

Component(s): Late Woodland

Recommendation: Potentially Eligible

This site is a rockshelter located on a bluff face approximately 15 m above and 20 m east of Roubidoux Creek (Figure B2). The surrounding vegetation on the steep slope is a mix of pines and grasses, while the rockshelter itself is devoid of vegetation. Surface visibility in the rockshelter was near 100 percent. The roughly C-shaped rockshelter covers an area 5 m north-south by 7.4 m east-west and has a floor-to-ceiling height of 1.5 m (Figure 47). No subsurface testing was conducted at this site, but a 2-m wide depression, most probably a looter's pit, was noted on the floor of the shelter. To the side of the pit is a roughly 2-m diameter spoil pile.

At the time of investigation hundreds of pieces of lithic debitage and a handful of ceramic sherds were present on the surface, but not collected. The surface collection was limited to two bipolar chert flakes and six ceramic sherds. The six collected sherds include five Maramec Cordmarked sherds and one limestone-tempered sherd that is too eroded to allow specific identification. Three of the cordmarked sherds have S-twists, perhaps indicating an early Maramec Spring phase affiliation (Kreisa et al. 1996). One cordmarked sherd is an inslanting jar rim with an interior slanting lip.

The limited amount of subsurface disturbance within the rockshelter indicates that there is a high potential for in situ remains at this site. Based on the level of preservation present at this site, it is recommended as potentially eligible for the NRHP. Phase II investigations are recommended. The Phase II investigation should focus on mapping the rockshelter, documenting previous disturbance of the archaeological deposits, determining if intact features are present by means of test unit excavations, and on recovering diagnostic artifacts and environmental data.

Site Number: 23PU636 (95-45: AOS 143)

USGS Quadrangle: Bloodland 7.5'

Elevation: 287 m asl

Site Type: Rockshelter

Soil Type: Gepp-Rock outcrop complex, 35-60 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Potentially Eligible

This rockshelter site is located on a bluff face approximately 20 m above and east of Roubidoux Creek (Figure B2). The surrounding vegetation on the steep slope is a mix of pines and grasses, although the rockshelter is unvegetated. Surface visibility was near 100 percent. The shelter has a large initial chamber that narrows to 4 m in width towards the rear. The site covers an area 10 m north-south by 8 m east-west (Figure 48). No subsurface testing was conducted, but two areas of disturbance were noted. First, a 2-m diameter depression towards the rear of the shelter was located, possibly a looter's pit. Second, several rodent burrows were evident on the floor along the south wall.

During documentation, lithics and fire-cracked rock were noted on the surface but not collected. The surface collection was limited to two bipolar chert flakes and one burnt mammal long bone. In addition, a large concentration of lithic debris was noted just outside the drip line of the shelter. The limited amount of subsurface disturbance indicates a high potential for in situ remains. Based on the level of preservation present at this site, it is recommended as potentially eligible for the NRHP. Phase II investigations are recommended. The Phase II investigation should focus on mapping the rockshelter, documenting previous disturbance of the archaeological deposits, determining if intact features are present by means of test unit excavations, and on recovering diagnostic artifacts and environmental data.

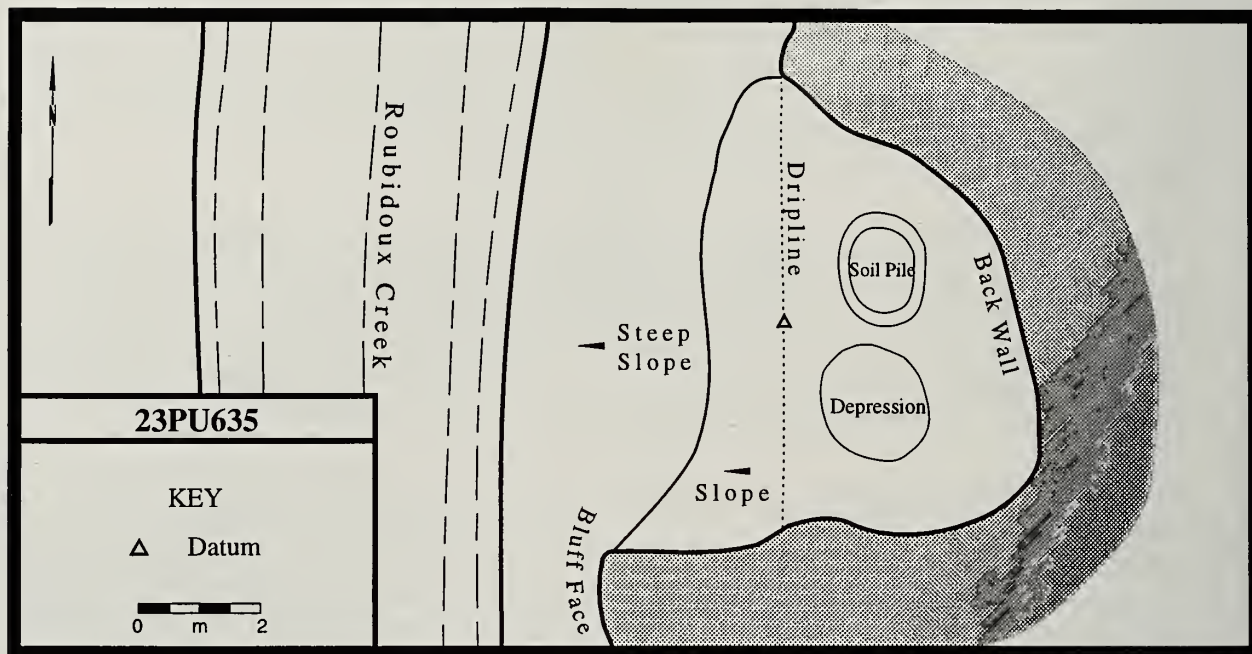


Figure 47. Sketch Map of 23PU635.

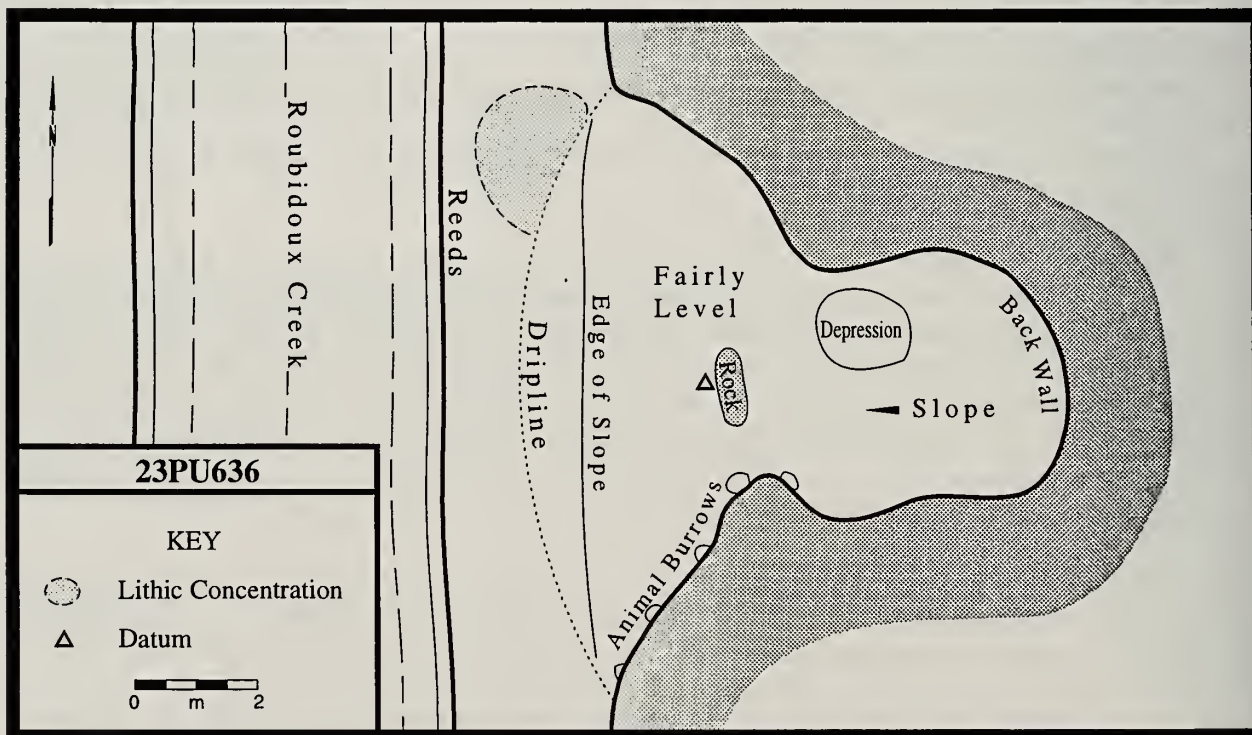


Figure 48. Sketch Map of 23PU636.

Site Number: 23PU637 (95-45: AOS 144)
USGS Quadrangle: Bloodland 7.5'
Elevation: 325 m asl
Site Type: Lithic Debris Scatter
Soil Type: Viraton silt loam, 3-9 percent slopes
Component(s): Unknown Prehistoric
Recommendation: Not Eligible

This site is located in the uplands on a gentle ridge slope leading into the head of an intermittent drainage of Roubidoux Creek (Figure B2). The drainage, located approximately 100 m to the north of the site, descends to the west where it joins Roubidoux Creek. The floodplain of Roubidoux Creek is approximately 800 m west of the site. The site is located in a planted pine forest with no surface visibility.

Six positive posthole tests were excavated at 23PU637. Based on the extent of these six tests, an irregularly shaped site area of 45 m north-south by 15 m east-west was defined (Figure 49). Site soil stratigraphy consists of an Ap horizon (plow zone) that is 15-30 cm thick, followed by a thin remnant (2-3 cm) E horizon. These are underlain by a BE or B horizon. All seven pieces of lithic debitage were recovered from plow zone contexts in the six positive posthole tests. Artifacts collected from this site include four tertiary flakes, two broken flakes, and one bipolar flake. No other material was recovered from either the surrounding 10-m grid of posthole tests or the surface. This site is recommended as ineligible for the NRHP given the high degree of disturbance due to plowing and the limited number of artifacts recovered. No additional investigations are recommended.

Site Number: 23PU638 (95-45: AOS 145)
USGS Quadrangle: Bloodland 7.5'
Elevation: 331 m asl
Site Type: Farmstead/Outbuildings
Soil Type: Viraton silt loam, 3-9 percent slopes
Component(s): 20th Century Historic
Recommendation: Not Eligible

This site is located in the uplands east of a gravel road and north of the head of a drainage that trends south toward Roubidoux Creek, which is located 600 m away (Figure B2). The site area is covered in grass. There was no surface visibility at the site. An historic plat map of 1900-1906 places a number of residential structures in the general vicinity of this site (Smith 1993). However, this site was not identified on aerial maps of the area that date to the 1930s and 1940s, although a structure is present on the 1948 Waynesville 15' quadrangle. This structure is no longer present on the 1954 Waynesville 7.5' quadrangle. Presumably, the structure was destroyed between 1948 and 1954.

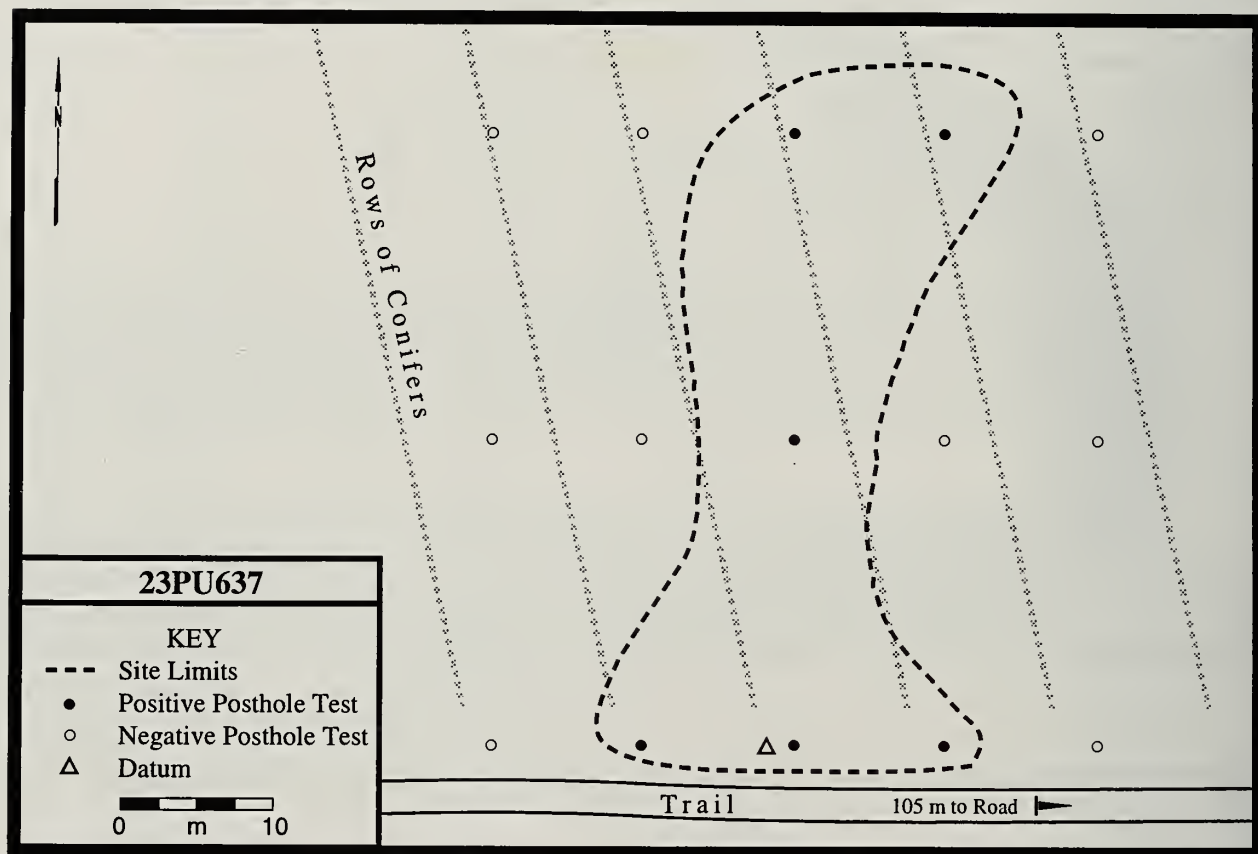


Figure 49. Sketch Map of 23PU637.

The site covers an area 35 m north-south by 35 m east-west and encompasses a number of surficial features (Figure 50). A concrete feed-barn foundation and a cistern/water trough were located on the east side of the north/south gravel road, and south of an abandoned east/west road that defines the site's northern boundary. A row of cedar trees marks that boundary. This site appears to be the remains of features that were once part of a twentieth-century farmstead. This temporal affiliation is based on the construction materials present at the site since no artifacts were found on the surface or in surrounding posthole tests. It appears that the domestic component of this site was located on the west side of the road. This area has been severely disturbed by earthmoving activity, and no evidence of a residence remains. This site is recommended as ineligible for the NRHP based on the high degree of disturbance that has compromised its integrity and the fact that extant examples of such sites are present in the Ozarks. No additional investigations are recommended.

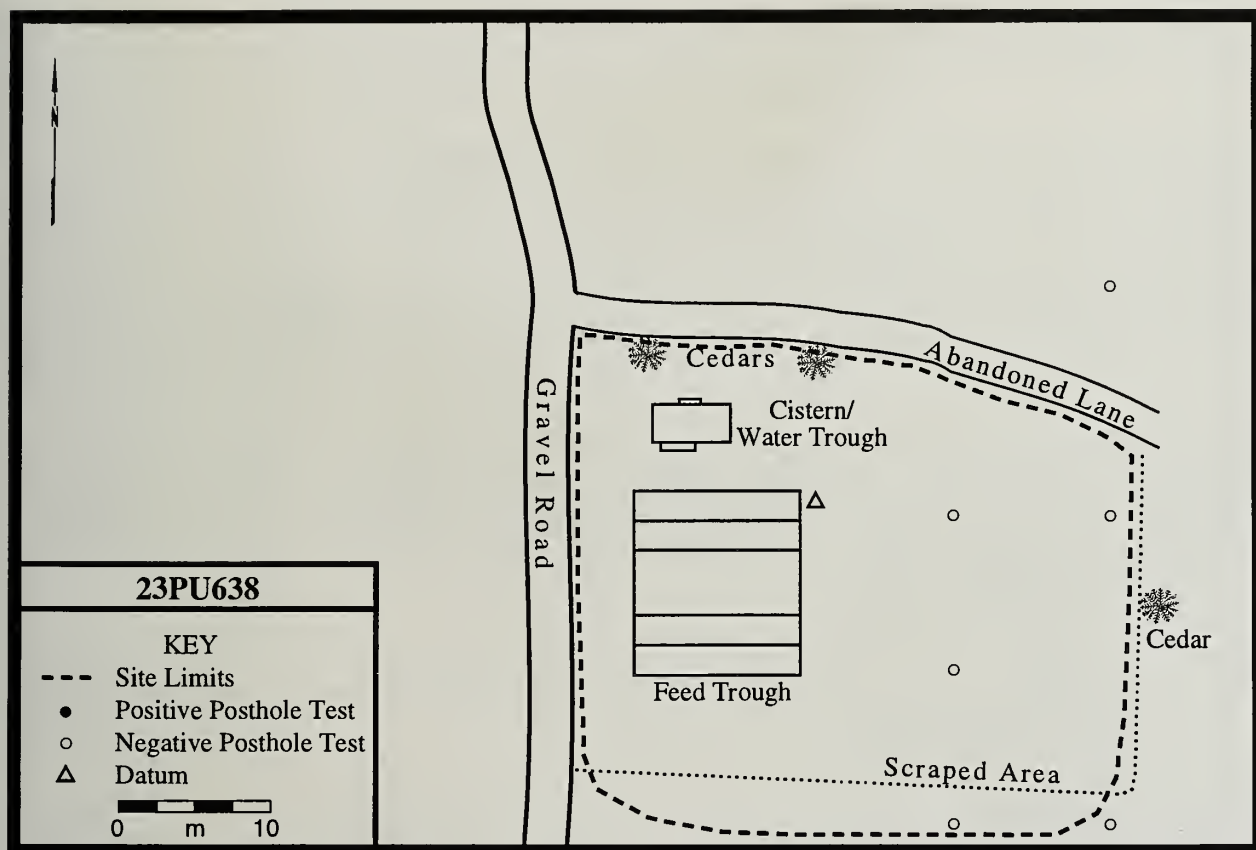


Figure 50. Sketch Map of 23PU638.

Site Number: 23PU639 (95-45: AOS 147)

USGS Quadrangle: Bloodland 7.5'

Elevation: 334 m asl

Site Type: Lithic Debris Scatter

Soil Type: Viraton silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This site is located on a side slope of an upland ridge that trends to the west toward a small unnamed drainage of Roubidoux Creek (Figure B2). The site is located 500 m north of Roubidoux Creek and approximately 30 m west of a main gravel road. It lies in mixed vegetation of oaks and grasses with no surface visibility.

The oval-shaped site, as defined on the basis of three positive posthole tests, covers an area 20 m north-south by 10 m east-west (Figure 51). All posthole tests indicated a soil stratigraphy consisting of a 20-cm thick Ap horizon (plow zone) followed by a B horizon. Lithic debitage was recovered from plow zone contexts in the three posthole tests. Artifacts collected from this site include a bifacial

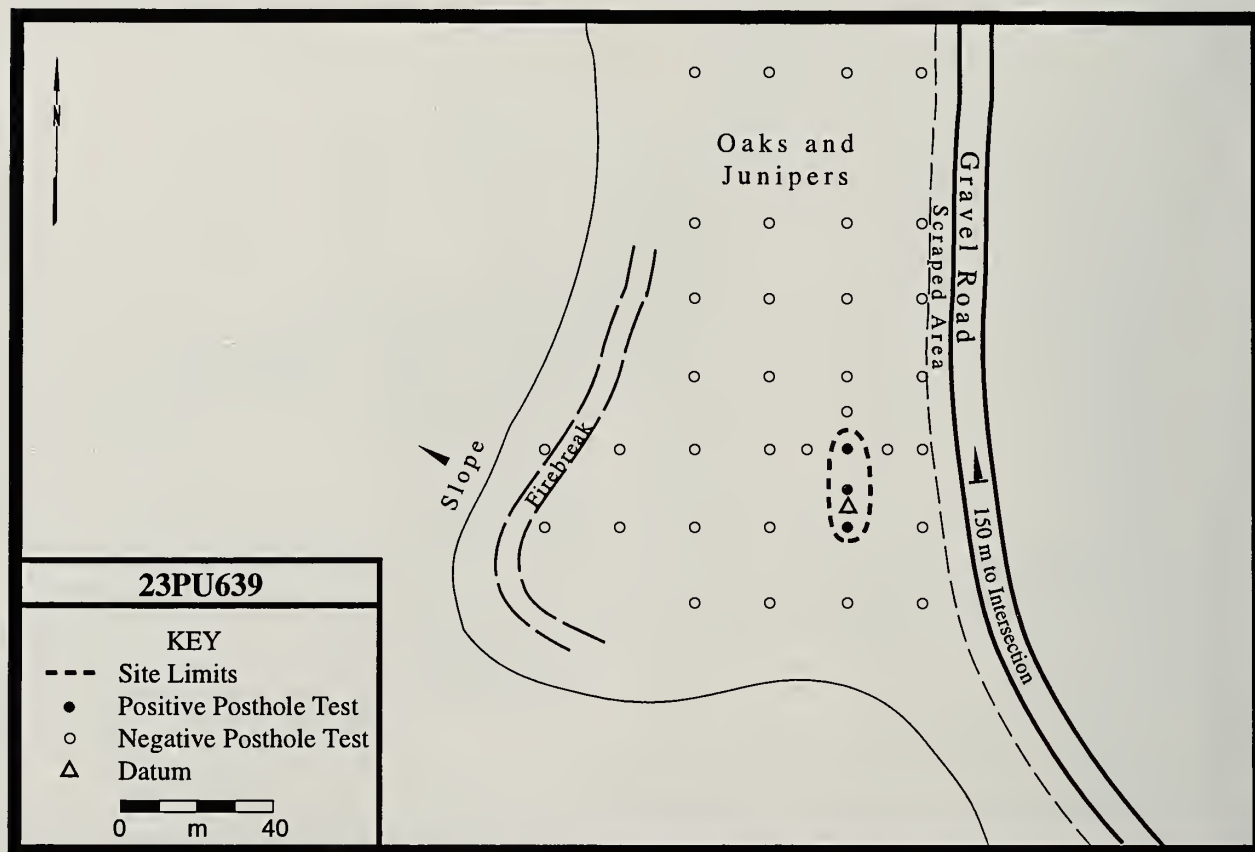


Figure 51. Sketch Map of 23PU639.

thinning flake, a broken flake and a bipolar flake. No additional material was recovered from the surrounding 10-m grid of posthole tests or the surface. This site is recommended as ineligible for the NRHP based on the degree of agricultural disturbance evidenced in the posthole tests and the limited number of artifacts recovered. No additional investigations are recommended.

Site Number: 23PU640 (95-45: AOS 148)

USGS Quadrangle: Bloodland 7.5'

Elevation: 332 m asl

Site Type: Lithic Debris Scatter

Soil Type: Viraton silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This site is located on a broad upland ridge situated between Roubidoux Creek to the southwest and Hurd Hollow to the northeast (Figure B2). Roubidoux Creek lies 380 m to the south. Previously recorded site 23PU241 is located to the east of 23PU640 on the same upland ridge. Immediately to the

west of the site is a gravel road running northwest to southeast. To the south of the site is Fort Leonard Wood Range 41 signage. At the time of investigation the site area was located in a grassy glade with few oaks and conifers present. There was no surface visibility.

Two positive posthole tests define an oblong site area roughly 5 m north-south by 10 m east-west (Figure 52). Subsurface tests excavated in the surrounding area did not locate additional materials. Site stratigraphy consisted of a 20-cm Ap horizon (plow zone) overlying the B horizon. Five artifacts were recovered from the two positive tests, consisting of four broken flakes and one tertiary flake. All five artifacts were recovered from the plow zone. This site has been impacted by agricultural plowing and resultant erosion. These processes have in turn destroyed any intact archaeological deposits, if ever present, at this site.

Based on the degree of agricultural disturbance and erosion that has impacted the integrity of deposits at the site and the limited number and range of artifacts collected during the current investigation, it is likely that additional investigations would recover only redundant data. Therefore, this site is considered ineligible for listing in the NRHP. No additional investigations are warranted.

Site Number: 23PU641 (95-45: AOS 159)

USGS Quadrangle: Bloodland 7.5'

Elevation: 318 m asl

Site Type: Lithic Debris Scatter

Soil Type: Viraton silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

Site 23PU641 is a lithic debris scatter located on a ridge north of previously recorded site 23PU241 (Figure B2). The site is located on a fairly level area near a break in the slope that descends toward Hurd Hollow, which is located 80 to 90 m to the northeast. This site is located within plantation pines with no surface visibility.

The site area is estimated at 13 m north-south by 15 m east-west, based on four positive posthole tests that produced lithic debris to 30 cm below surface (Figure 53). Soil profiles indicate an Ap horizon (plow zone) extending to approximately 20 cm below surface, underlain by a thin E horizon about 5 cm thick. Clayey B horizon sediments were encountered at depths below 25 cm. Five artifacts were recovered at this site, consisting of four broken flakes and one tertiary flake. Three of the flakes were found in the plow zone while two were from the E horizon. Given the paucity of material found in the E horizon and the thinness of that horizon, additional investigations would not recover data to address questions of regional or local importance. This site is considered ineligible for the NRHP, and no additional investigations are recommended.

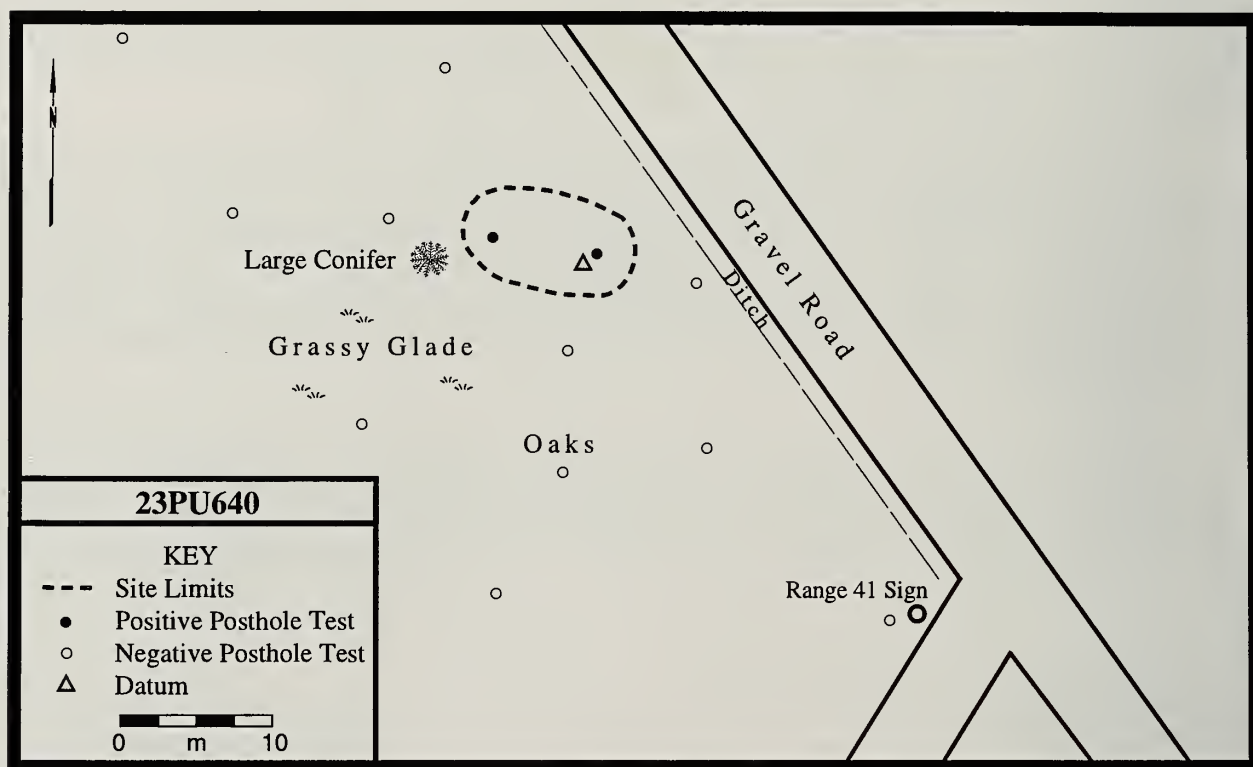


Figure 52. Sketch Map of 23PU640.

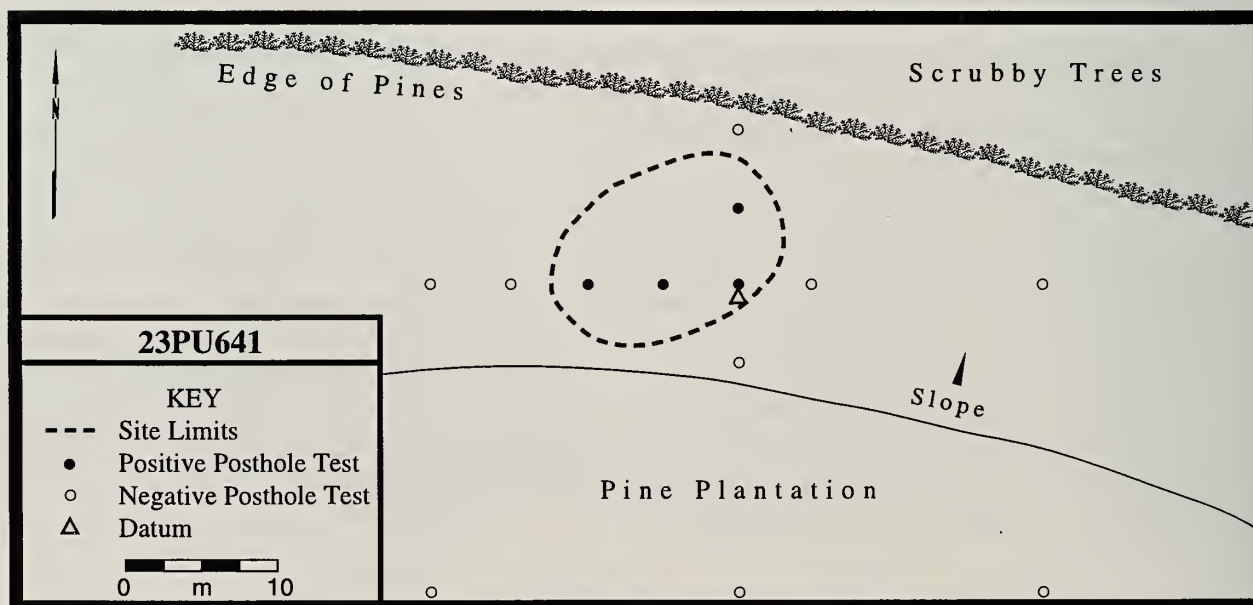


Figure 53. Sketch Map of 23PU641.

Site Number: 23PU642 (95-45: AOS 162)
USGS Quadrangle: Bloodland 7.5'
Elevation: 312 m asl
Site Type: Lithic Debris Scatter
Soil Type: Viraton silt loam, 3-9 percent slopes
Component(s): Unknown Prehistoric
Recommendation: Potentially Eligible

This site is a lithic debris scatter located on an upland ridge above Hurd Hollow (Figure B2). The site is approximately 60 m northwest of 23PU641 and 100 m south of the small drainage running through the hollow to the north. The site is located within plantation pines and is bounded on the east by a two-track road. There was no surface visibility at the time of survey.

Based on the distribution of 14 positive posthole tests, limits of the oblong-shaped site are defined as approximately 65 m north-south by 40 m east-west (Figure 54). Lithic debris, including secondary flakes, tertiary flakes, broken flakes, bifacial thinning flakes, block shatter, and two thin biface fragments was recovered up to 50 cm below surface. Soil profiles indicate an Ap horizon (plow zone), 20 cm thick, overlaying an E or EB horizon, which is approximately 10 cm thick. Both the Ap and E/EB sediments contain numerous small gravel and pebbles. The bulk of the recovered lithic debris was within the upper 30 cm of the soils, but one positive posthole test produced materials to nearly 50 cm below surface. This particular test, Posthole 20, has a profile significantly different from the others excavated at the site. Posthole 20 has a 20-cm thick Ap horizon that overlies 30 cm of yellowish brown silt loam. The B horizon silty clay loam sediments are present at 50 cm below surface. This profile is indicative of some prior disturbance, possibly a cultural feature at this location. Forty-two artifacts were recovered from the positive tests, most of which are various flake categories. Of the 42 artifacts, 13 were recovered from intact deposits below the plow zone (Table 10).

Given the relatively intact soil horizon located below the plow zone, the number of artifacts found in those deposits, and the identification of a possible feature, this site is considered to be potentially eligible for NRHP listing. Phase II testing of the site is recommended. The Phase II investigation should focus on mapping the site, determining if intact features are present by means of test unit excavations, and on recovering diagnostic artifacts and environmental data.

Site Number: 23PU643 (95-45: AOS 165)
USGS Quadrangle: Bloodland 7.5'
Elevation: 313 m asl
Site Type: Lithic Debris Scatter
Soil Type: Clarksville-Gepp very cherty silt loams, 14-35 percent slopes
Component(s): Unknown Prehistoric
Recommendation: Not Eligible

23PU643, a lithic debris scatter, is located southwest of a small intermittent stream that drains into Hurd Hollow (Figure B2). To the south and west of this site are the steep side slopes of a spur of a

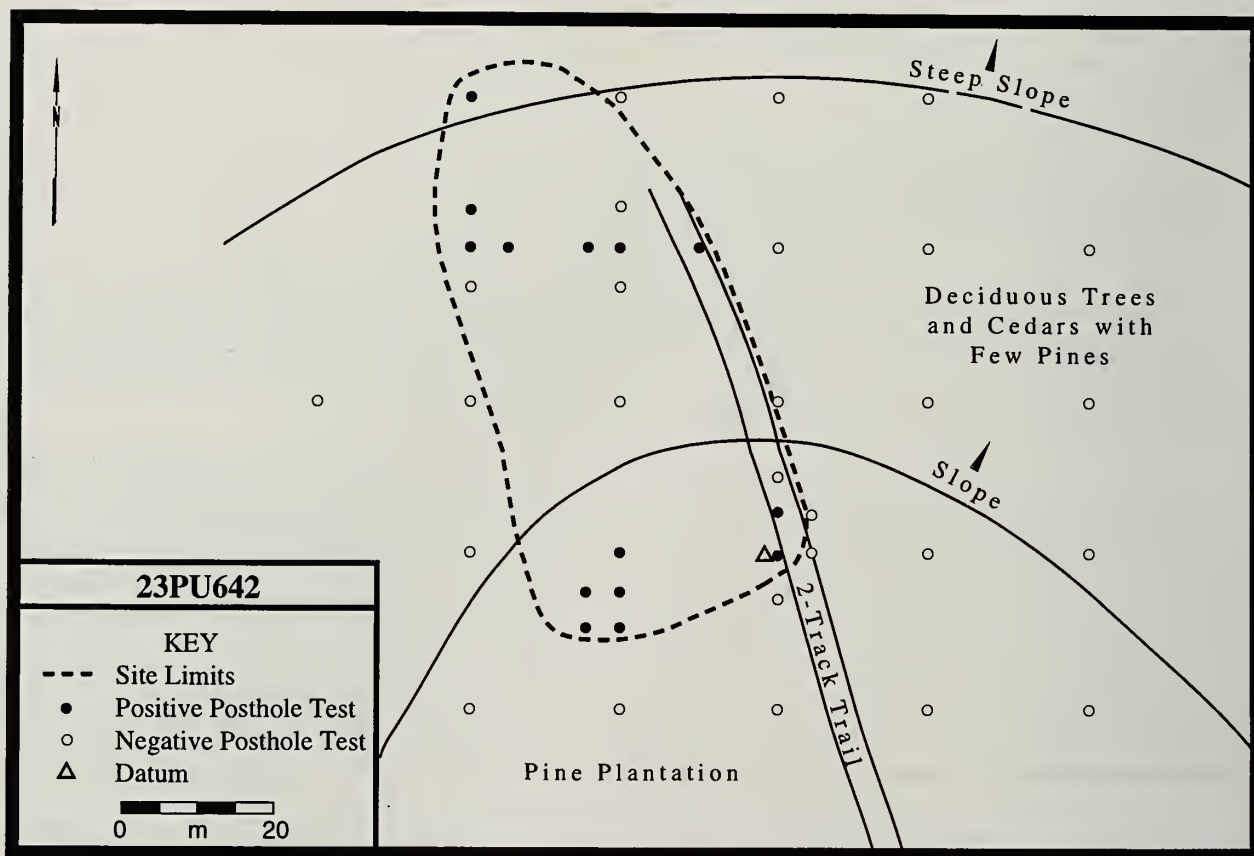


Figure 54. Sketch Map of 23PU642.

Table 10. Distribution of Artifacts Collected from 23PU642.

Soil Horizon	Depth of Artifacts	Number of Artifacts
Ap	0-20 cm	29
E	20-50 cm	13

large upland ridge. Four prehistoric sites—23PU241, 23PU666, 23PU667, and 23PU669—are located upslope from 23PU643. This site is within an area of plantation pines with no surface visibility.

Three positive posthole tests were excavated, from which a site area 12 m north-south by 10 m east-west was defined (Figure 55). The positive tests are located about 10 m west of the stream and 40 m south of a narrow, dry drainage. An A-E-B soil horizon sequence was identified in the positive tests, although the A horizon may be somewhat thicker than normal (20 cm or more) due to erosion from the nearby uplands. Three flakes (two broken, one tertiary) were recovered from the positive tests. Given the close proximity of this site to a number of other prehistoric sites located in the uplands and the somewhat thickened A horizon noted on site, the depositional integrity of the recovered artifacts is questionable. They may represent material eroded from the nearby upland sites. Given the uncertain depositional context, the paucity of artifacts and the limited diversity of the material, this site is not considered eligible for listing in the NRHP. No further work is recommended.

Site Number: 23PU644 (95-45: AOS 166)

USGS Quadrangle: Bloodland 7.5'

Elevation: 306 m asl

Site Type: Lithic Debris Scatter

Soil Type: Clarksville-Gepp very cherty silt loams, 14-35 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

23PU644 is a lithic debris scatter that occupies the east bank of a small, intermittent stream that flows northward to join Hurd Hollow (Figure B2). Eight other prehistoric sites are located either within this intermittent stream drainage or in the uplands above. The site is located within a mixed pine and deciduous forest with surface visibility entirely lacking.

Six positive posthole tests yielded lithic debris within an area approximately 65 m north-south by 30 m east-west (Figure 56). Soil profiles indicate an Ap horizon (plow zone) extending to between 20 and 25 cm below surface, overlying a 5-cm thick E horizon. Gravel and pebbles are common in the upper soil horizons. Given the site location on a side slope, it appears that the A horizon has been accreting due to slope wash. The banks of the small intermittent stream were visually inspected for evidence of cultural materials and features, but despite excellent visibility, none were noted. Twelve artifacts were recovered from the six positive tests. These include eight broken flakes, two tertiary flakes, one blade, and one unifacially retouched flake. Of the twelve artifacts, 10 were found in the Ap horizon while two are from uncertain contexts. It would appear that the archaeological deposits at this site lack integrity due to plowing. Based on the lack of integrity, this site is not eligible for listing in the NRHP. No additional work is recommended.

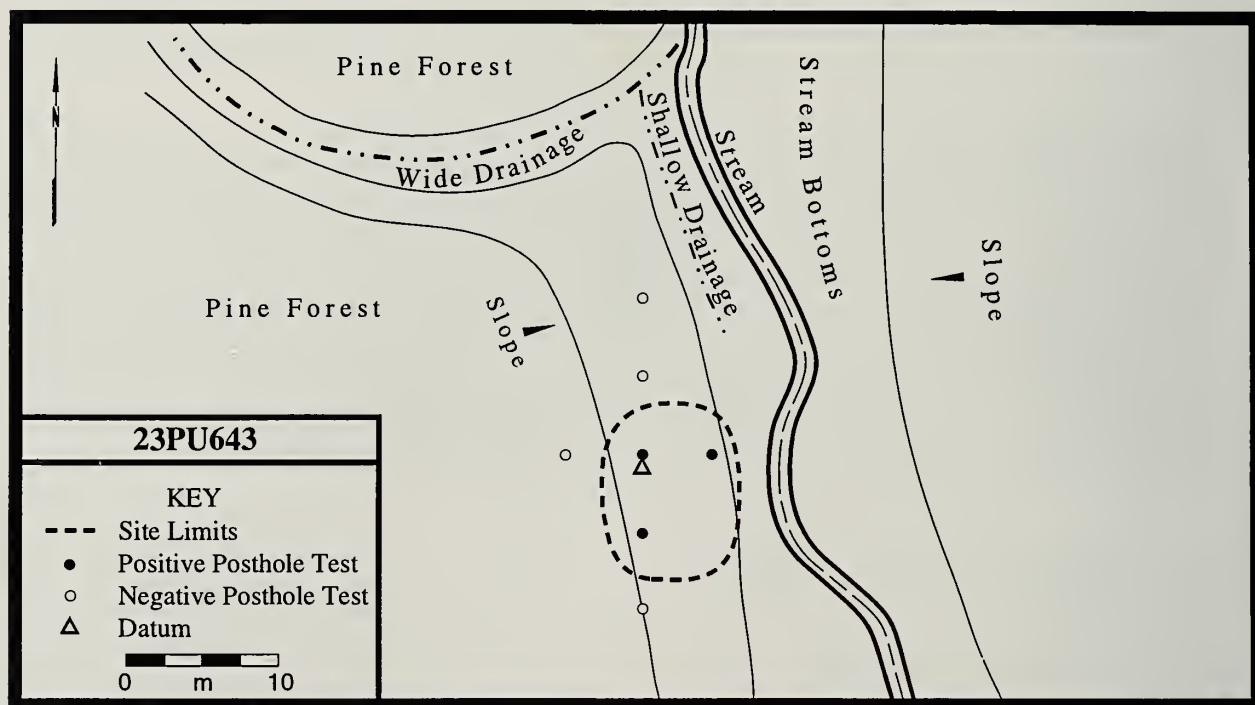


Figure 55. Sketch Map of 23PU643.

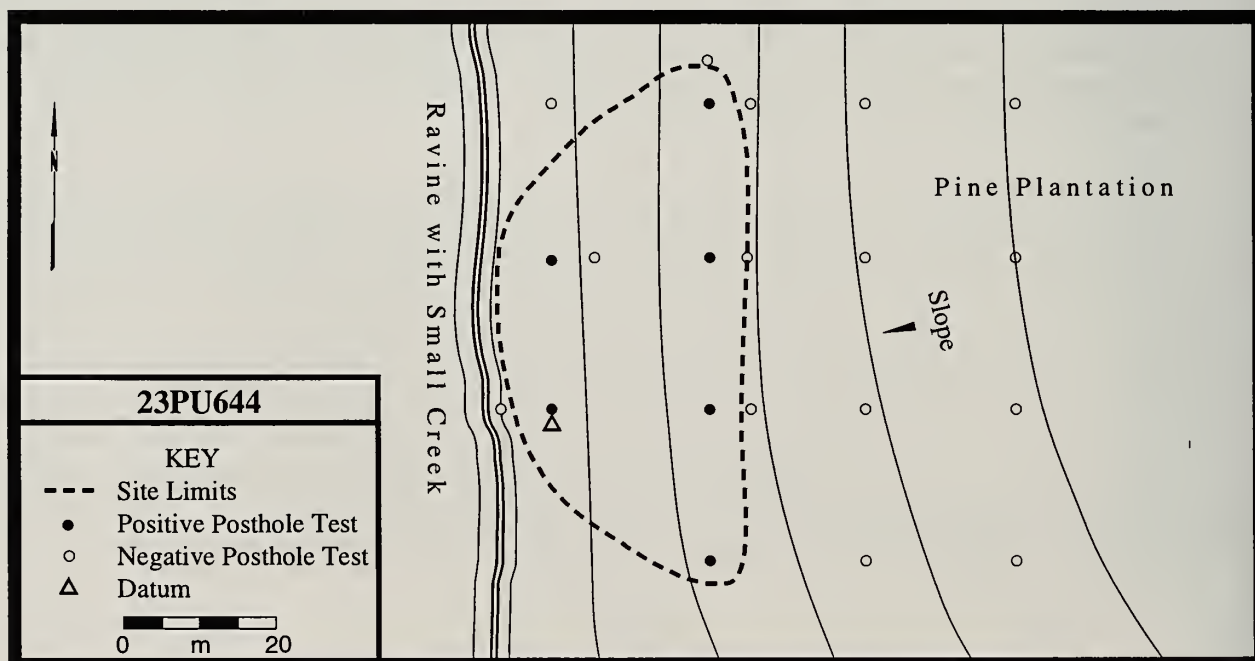


Figure 56. Sketch Map of 23PU644.

Site Number: 23PU650 (95-45: AOS 135)
USGS Quadrangle: Bloodland 7.5'
Elevation: 315 m asl
Site Type: Prehistoric Isolated Find/Unknown Historic
Soil Type: Viraton silt loam, 3-9 percent slopes
Component(s): Unknown Prehistoric/20th Century
Recommendation: Not Eligible

This site is located on a slight slope of a west-trending upland ridge on the east side of Roubidoux Creek (Figure B2). The closest source of water is an unnamed intermittent drainage of Roubidoux Creek that is 360 m to the southwest. The site is located in a pine plantation forest that overlooks an unnamed drainage. The Roubidoux Creek valley is about 800 m to the west. The site is 30 m south of an access trail that is situated about midway to the break in slope. While no surface visibility is present, disturbance from foxhole construction is evident.

Two positive posthole tests were excavated at 23PU650. Based on the extent of these two positive tests, the site covers an area approximately 10 m north-south by 10 m east-west (Figure 57). Two chert flakes (secondary and broken) and four historic artifacts were recovered from the initial 20 cm below surface in the two posthole tests. The historic material consisted of a wire nail, a metal file/rasp, pink cut glass, and a fragment of Bristol-slipped stoneware, all of which potentially date to the twentieth century. Three additional posthole tests were excavated at 10-m intervals from the two positive tests, but no additional material was recovered from them or the surrounding posthole tests on the 20-m grid.

This site is recommended as ineligible for the NRHP based on the limited amount of artifacts and the mixture of prehistoric and historic artifacts that suggests the site area has been disturbed by agricultural and military activities. No additional investigations are recommended.

Site Number: 23PU651 (95-45: AOS 136)
USGS Quadrangle: Bloodland 7.5'
Elevation: 331 m asl
Site Type: Lithic Tool and Debris Scatter
Soil Type: Viraton silt loam, 3-9 percent slopes
Component(s): Unknown Prehistoric
Recommendation: Not Eligible

This site is located on a prominent upland ridge crest spur overlooking Roubidoux Creek, which is located 200 m to the west (Figure B2). The spur is part of a larger upland ridge on which a number of sites are located. Ravines located to the north and south constrict the spur and empty into the Roubidoux Creek valley immediately to the west. The site area is primarily covered with an oak forest and a few juniper trees. The spur is bisected by a bulldozed trail. Except for a number of spoil piles, there was no surface visibility due to leaf litter and grass cover.

Site boundaries are defined by steep slopes on the north and south sides and by the extent of nine positive posthole tests and surface-collected artifacts. The oval-shaped site covers an area with

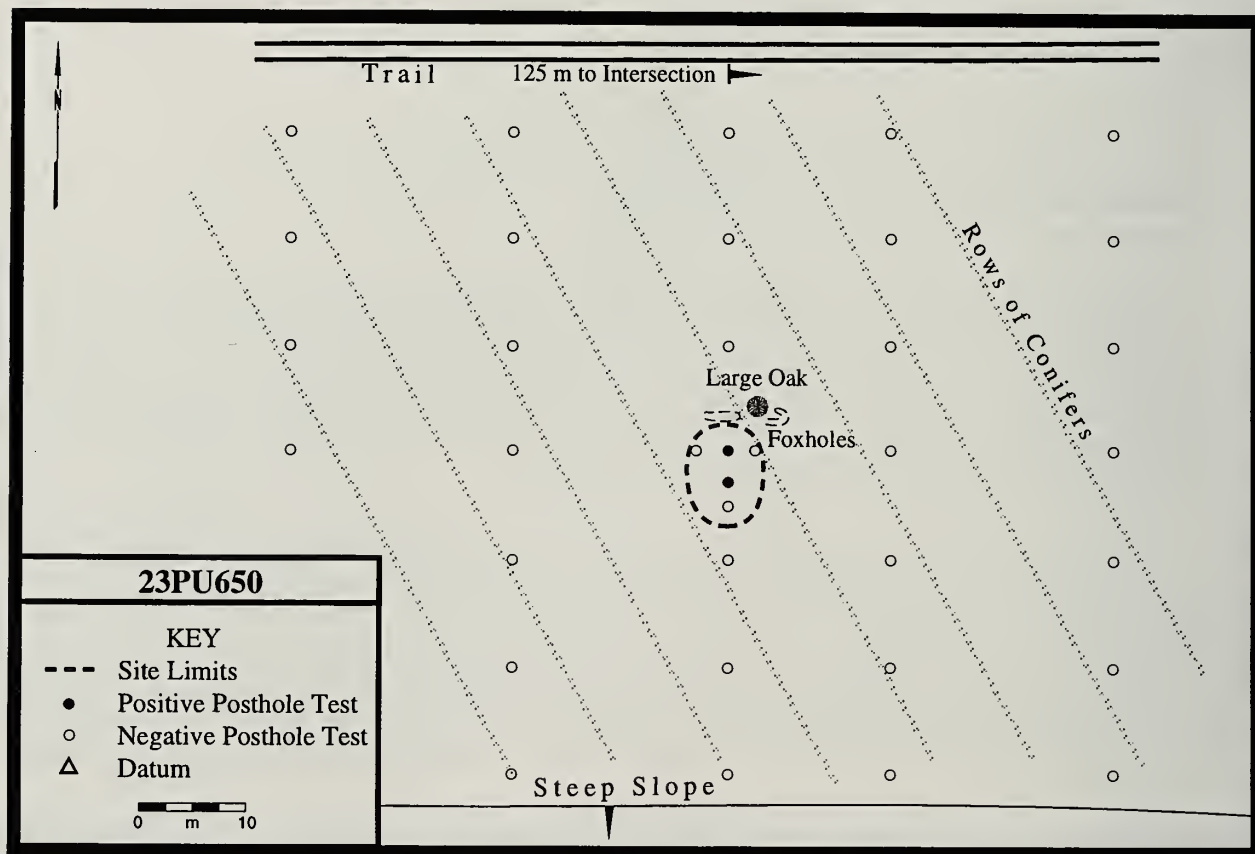


Figure 57. Sketch Map of 23PU650.

maximum dimensions of 80 m north-south by 125 m east-west (Figure 58). Artifacts were recovered from the surface to 25 cm below ground surface in nine posthole tests. Site stratigraphy consists of an Ap horizon (plow zone) between 10 cm and 20 cm thick, and an E horizon, variously present, up to 12 cm thick.

A total of 44 artifacts was recovered from posthole excavations and the surface, including a wide variety of lithic debris and bifaces. The assemblage consists of 25 broken flakes, 11 tertiary flakes, two primary flakes, one secondary flake, two cores, two bifaces, and one piece of clear lamp(?) glass. The bifaces are fragments of thick and thin bifaces. Of the 44 artifacts, 22 were found in the plow zone, 13 on the surface, and only two from the E horizon. Seven artifacts are from either the A or E horizons. The stratigraphic position of the artifacts, most of which were found on the surface or in the plow zone, and the variable presence of the E horizon indicates that plowing and subsequent erosion have negatively impacted this site. This site is recommended as ineligible for the NRHP based on the high degree of disturbance and the limited number of artifacts recovered from intact deposits. No additional investigations are recommended.

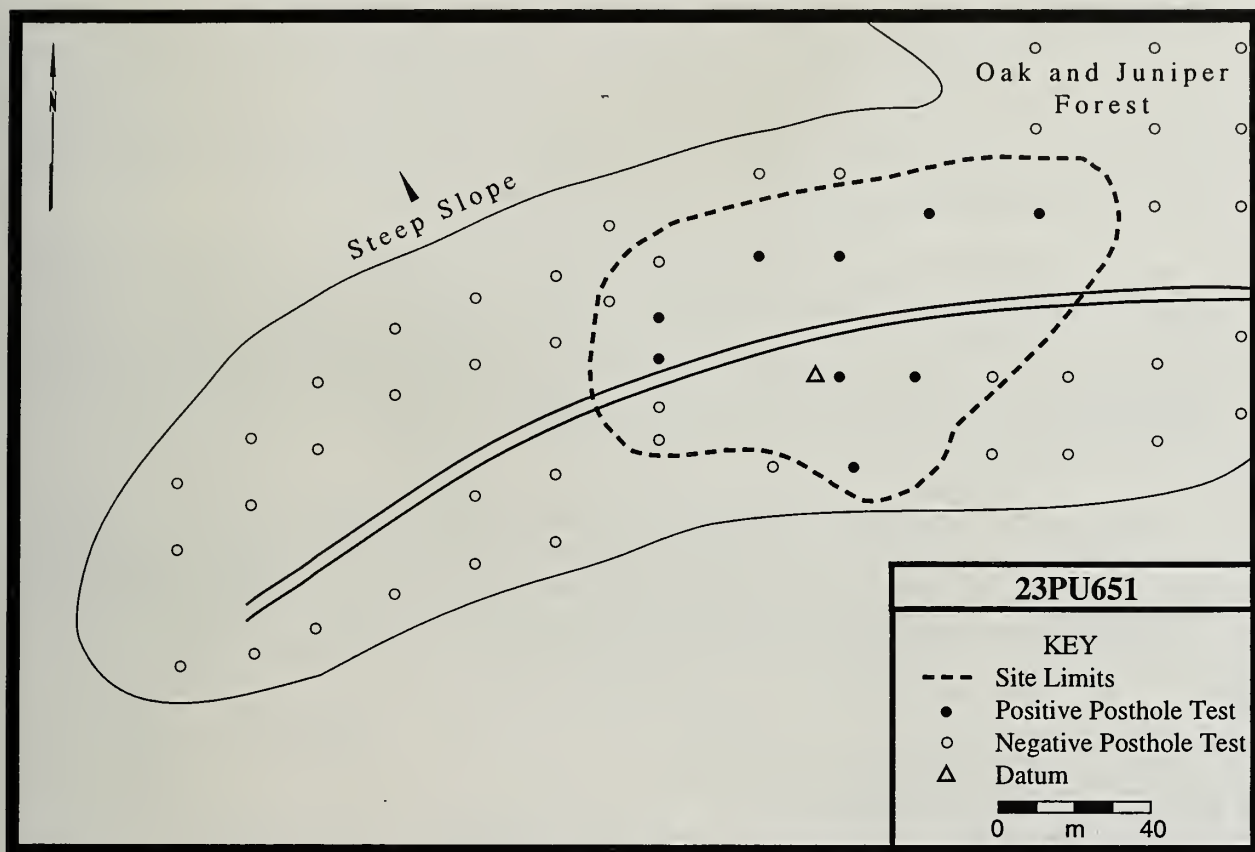


Figure 58. Sketch Map of 23PU651.

Site Number: 23PU652 (95-45: AOS 137)

USGS Quadrangle: Bloodland 7.5'

Elevation: 334 m asl

Site Type: Lithic Tool and Debris Scatter

Soil Type: Viraton silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Potentially Eligible

This site is located on an upland ridge crest spur overlooking Roubidoux Creek, which flows 200 m to the west (Figure B2). The spur is part of a larger upland ridge on which a number of sites are located, including 23PU651, which is situated on another ridge spur to the south. Ravines located to the north and south constrict the spur and empty into the Roubidoux Creek valley immediately to the west. The site area is primarily covered with an oak forest and a few juniper trees. There was no surface visibility at the time of survey because of leaf litter and grass cover. A dirt road is east of the site and forms part of its eastern boundary.

Site boundaries are defined by steep slopes on its north and southwest sides, the trail to the east, and the extent of 26 positive posthole tests (Figure 59). Based on these criteria, this irregularly shaped site covers an area with maximum dimension of 120 m north-south by 140 m east-west. Soil stratigraphy at the site consists of an Ap horizon (plow zone) between 10 cm and 20 cm thick and an E horizon that is 10–15 cm thick when present. Artifacts were recovered from the surface to 25 cm below ground surface in the 26 positive tests from both the A and E soil horizons.

In all, 70 artifacts were collected from both positive postholes and the surface. The artifacts include 38 broken flakes, 16 tertiary flakes, six secondary flakes, one primary flake, three pieces of block shatter, one core, one unifacially retouched flake, and four thin biface fragments. Most of this material was recovered from the surface or plow zone (66 percent), although 23 percent of the material was found in the intact E horizon (Table 11). In addition, six artifacts were found in either the Ap or E horizons, and two were from undocumented contexts.

The recovery of artifacts from relatively intact soils indicates a high potential for in situ remains, although not all areas of the site are likely to retain intact deposits. Based on the level of preservation at this site, it is recommended as potentially eligible for the NRHP. Phase II investigations are recommended that should focus on mapping the site, determining if intact features are present by means of test unit excavations, and on recovering diagnostic artifacts and environmental data.

Site Number: 23PU653 (95–45: AOS 138)

USGS Quadrangle: Bloodland 7.5'

Elevation: 325 m asl

Site Type: Lithic Debris Scatter

Soil Type: Viraton silt loam, 3–9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This site is located on a side slope of a south-trending upland ridge on the east side of Roubidoux Creek (Figure B2). The site is located in a oak forest overlooking an unnamed drainage that flows into Roubidoux Creek, 400 m to the west. The unnamed intermittent drainage, 200 m to the south, is the closest source of water. There was no surface visibility at the site.

On the basis of three positive posthole tests, an oval-shaped site area measuring 20 m north-south by 10-m east-west was defined (Figure 60). No other material was recovered from the surrounding 10-m grid of posthole tests or from the surface. Based on these positive tests, a 10-cm thick A horizon and a 10–20-cm thick E horizon were identified. Artifacts were recovered from 0–30 cm below surface in the three posthole tests, and include one unifacially retouched flake, one bifacial thinning flake, and one bipolar flake. Two of the three artifacts were recovered from the E horizon.

This site is recommended as ineligible for the NRHP based on the limited number of artifacts recovered both from the site as a whole and from intact deposits. The limited number and diversity of artifacts suggest that additional excavations would yield essentially redundant material. No additional investigations are recommended.

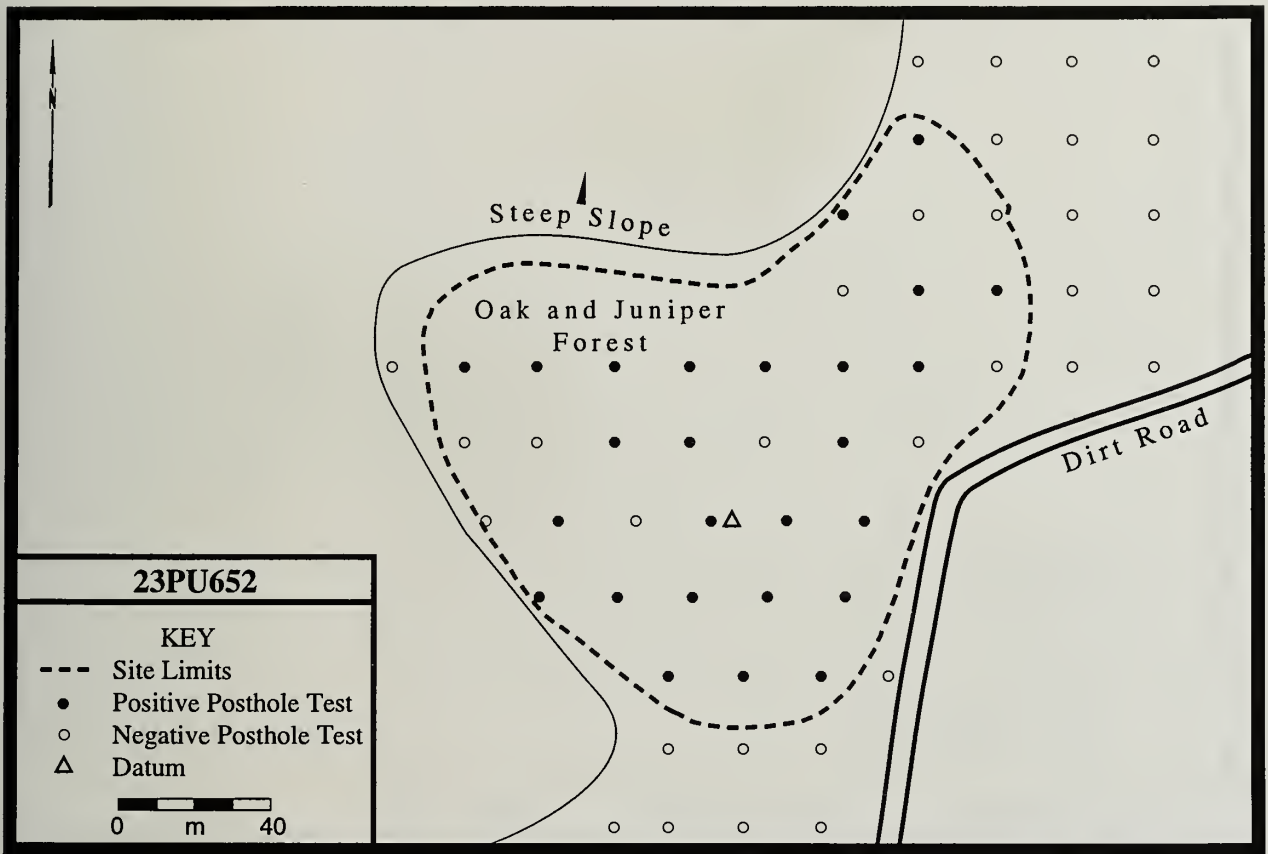


Figure 59. Sketch Map of 23PU652.

Table 11. Distribution of Artifacts Collected from 23PU652.

<i>Soil Horizon</i>	<i>Thickness of Horizon</i>	<i>Number of Artifacts</i>
Ap	10–20 cm	45
E	0–15 cm	16
Ap or E	See Above	6
Surface	—	1
Uncertain	—	2

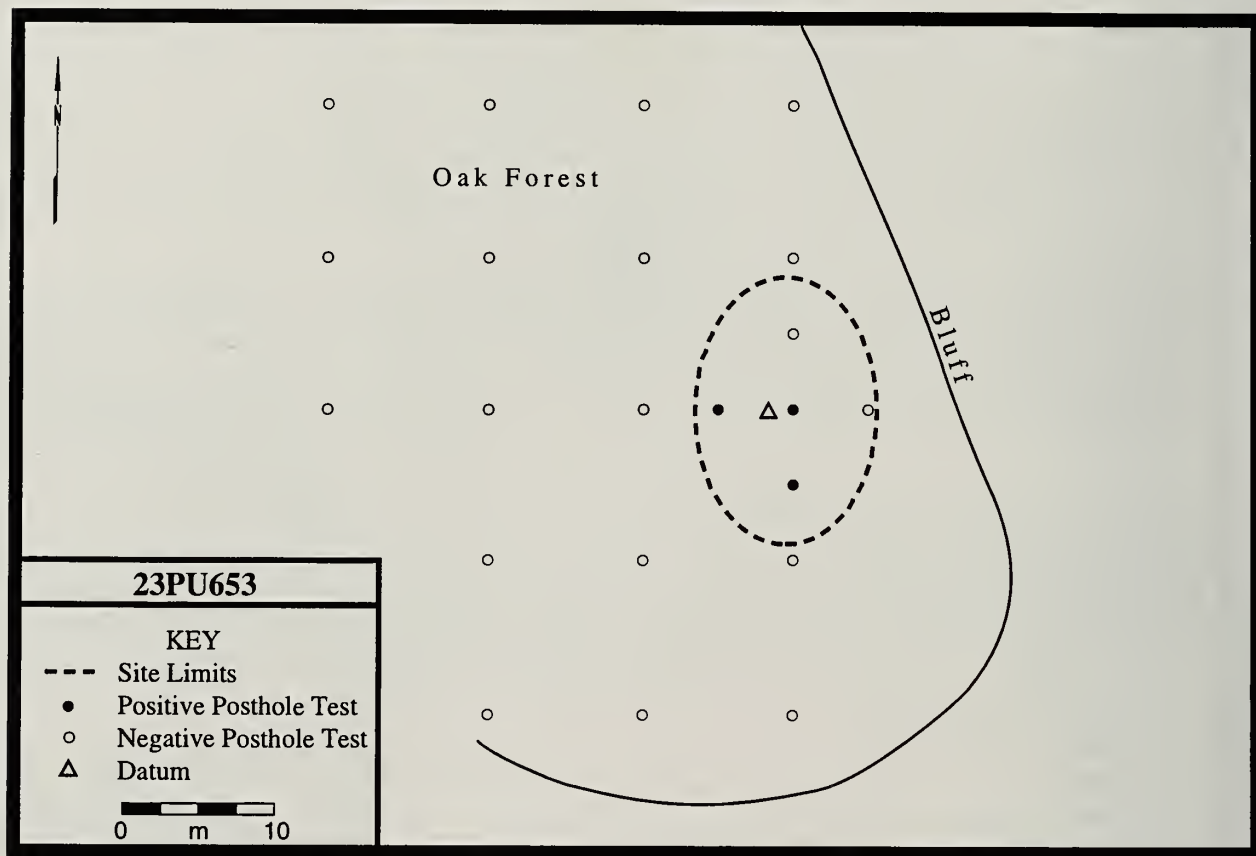


Figure 60. Sketch Map of 23PU653.

Site Number: 23PU654 (95-45: AOS 140)

USGS Quadrangle: Bloodland 7.5'

Elevation: 332 m asl

Site Type: Lithic Debris Scatter

Soil Type: Viraton silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This site is located on a multilobed west-trending upland ridge on the east side of Roubidoux Creek (Figure B2). An unnamed drainage 250 m to the north of the site flows westward for 400 m to the west into the Roubidoux Creek valley. This site lies within a pine plantation while 10 m to its south is an access trail. There was no surface visibility at the site because of pine needles on the forest floor.

The distribution of five positive posthole tests were used to define a circular site with a diameter of 20 m (Figure 61). Site stratigraphy consists of an Ap horizon (plow zone) that ranges from 20-30 cm thick, an E/BE horizon, 10 cm to 15 cm thick, and the underlying B horizon. All of the lithic debitage was recovered from the plow zone, between 0 and 20 cm below surface, in the five posthole

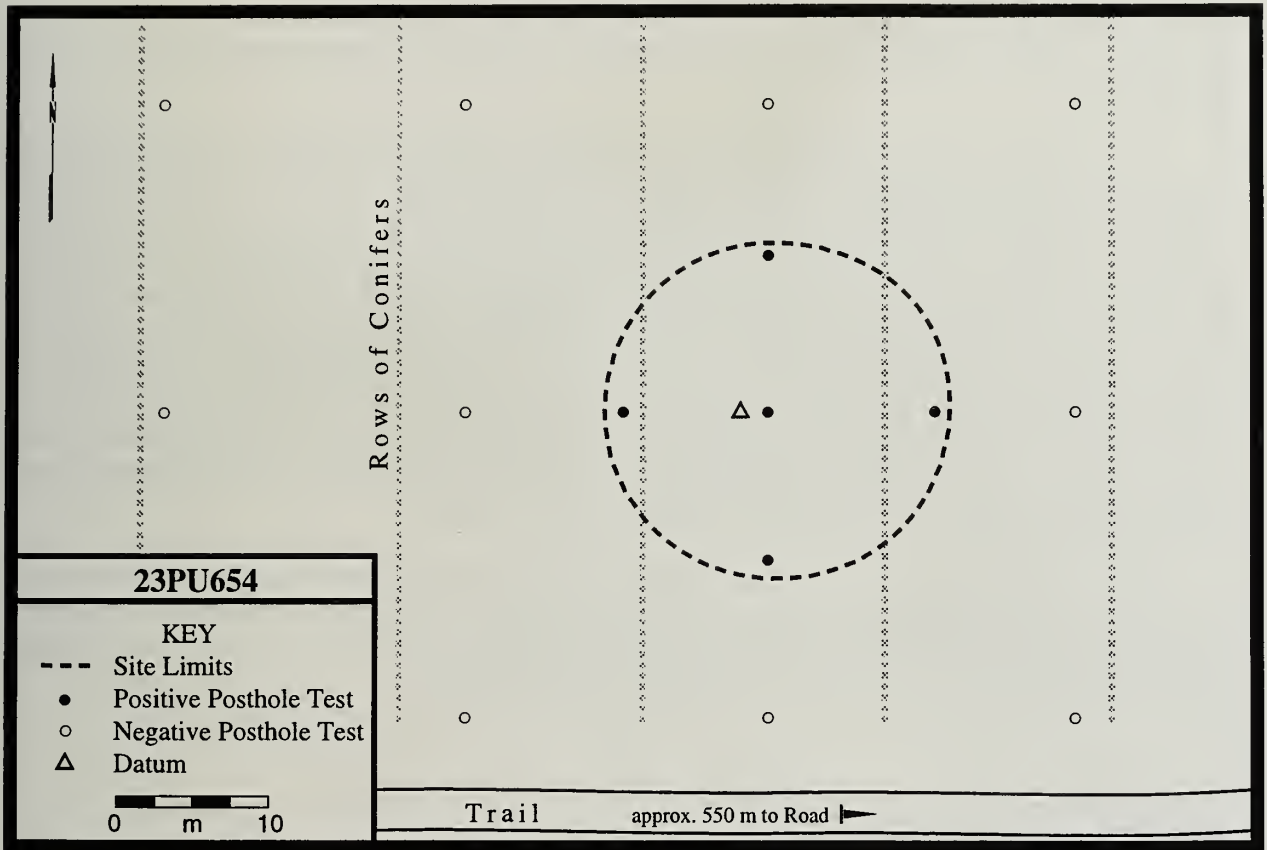


Figure 61. Sketch Map of 23PU654.

tests. Eighteen pieces of debitage were recovered, including broken and tertiary flakes, block shatter, and a single blade. No other material was recovered from the surrounding 10-m grid of posthole tests. This location is recommended as ineligible for the NRHP based on the degree of agricultural disturbance evidenced by the subsurface tests and the lack of artifacts recovered from below the plow zone. No additional investigations are recommended.

Site Number: 23PU665 (95-45: AOS 167)

USGS Quadrangle: Bloodland 7.5'

Elevation: 314 m asl

Site Type: Lithic Debris Scatter

Soil Type: Clarksville-Gepp very cherty silt loams, 14-35 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

Site 23PU665 is a lithic debris scatter located in a small ravine 20 m west of an intermittent stream that flows north to join Hurd Hollow (Figure B2). The site is located within plantation pines with a

mixed understory. Disturbance by a recent tree fall within the limits of the site has allowed the spread of raspberry bushes, creating a fairly dense thicket. There was no surface visibility at the time of investigation.

Five positive posthole tests were excavated in the area. Based on the extent of these positive tests, dimensions of this oval-shaped site are estimated at 40 m north-south by 20 m east-west (Figure 62). The southern limit of the scatter is a small gully that runs east to join the intermittent stream approximately 20 m east of the site boundary. Soil profiles indicate a 25-cm thick dark brown silt loam Ap horizon overlying a thin (5–8 cm) E horizon. The yellow brown silt loam B horizon is encountered at between 30 and 33 cm below surface. Ten artifacts were recovered from the five positive tests. These consist of seven broken flakes, two tertiary flakes, and one secondary flake. Six flakes were recovered from the plow zone, three from either the plow zone or the E horizon, and only one from the E horizon. Given that most material was recovered from the plow zone, it is probable that most of the original intact E horizon deposits have been disturbed by plowing. The remaining intact E horizon deposits appear to contain a light concentration of flakes.

Based on the degree of agricultural disturbance that has impacted the integrity of deposits at the site and the limited number and range of artifacts collected at the site, it is likely that additional investigations would recover only redundant data. Therefore, this site is recommended as ineligible for listing in the NRHP. No additional investigations are warranted.

Site Number: 23PU666 (95–45: AOS 172)

USGS Quadrangle: Bloodland 7.5'

Site Type: Residence/Farmstead—Lithic Debris Scatter

Soil Type: Viraton silt loam, 3–9 percent slopes

Component(s): 20th Century/Unknown Prehistoric

Recommendations: Not Eligible

The site is located on the east slope of a large upland ridge (Figure B2). To the northeast is Hurd Hollow while Roubidoux Creek is to the southeast. East of the site is a ravine that empties into Hurd Hollow. Current ground cover consists of mainly of grass and weeds, with a few juniper trees and scrub oaks also present. Ground surface visibility is about 10 percent.

The site, based on the distribution of both positive prehistoric posthole tests and historic foundations, measures 115 m north-south by 100 m east-west (Figure 63). The historic component consists of a circular silo foundation, a limestone/sandstone-block foundation and two linear piles of limestone blocks. Two postholes, located between the structural foundation and the silo, contained historic material. This material consisted of three pieces of undecorated ironstone, one piece of which was burnt, and a canning jar base embossed with "1915". Aerial photographs from the 1930s and 1940s indicate structures in this area, as does the 1948 Waynesville 15' quadrangle. Based on the construction materials and artifacts, the historic component of this site appears to represent a late nineteenth and, more probably, twentieth century farm and residence.

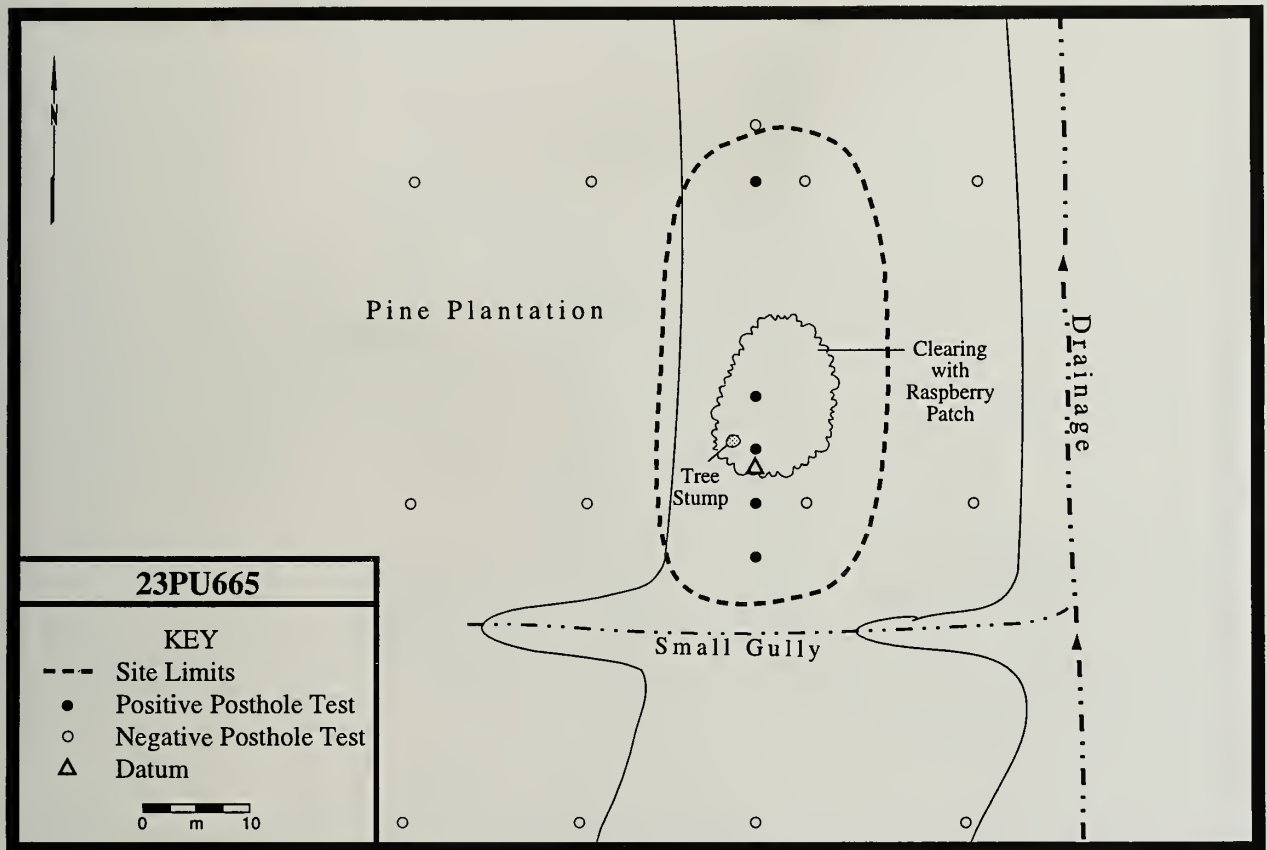


Figure 62. Sketch Map of 23PU665.

The prehistoric material recovered consists of chert debitage from three posthole tests. Site stratigraphy consists of an historically disturbed A horizon that is generally 10 cm thick, an E horizon that is variously present, but when present is up to 12 cm thick. Four artifacts were recovered from the three positive tests. These include two broken flakes, one tertiary flake and one secondary flake. One flake was found in the disturbed A horizon, one in the E horizon, and two could not be attributed to either soil horizon. It appears that much of the integrity of the prehistoric component of 23PU666 has been impacted by the historic occupation of this location.

Impacts from the historic use of this landform have severely impacted the prehistoric component of this site. In contrast, the historic foundations are relatively well-preserved and there does not appear to have been any significant disturbance of the historic component. However, given the recent nature of the historic component and the fact that surviving examples of such sites can be found in the Ozarks, 23PU666 is unlikely to provide data significant to questions of local or regional history. Therefore, neither component of the site is recommended for additional work. The site is recommended as ineligible for listing in the NRHP.

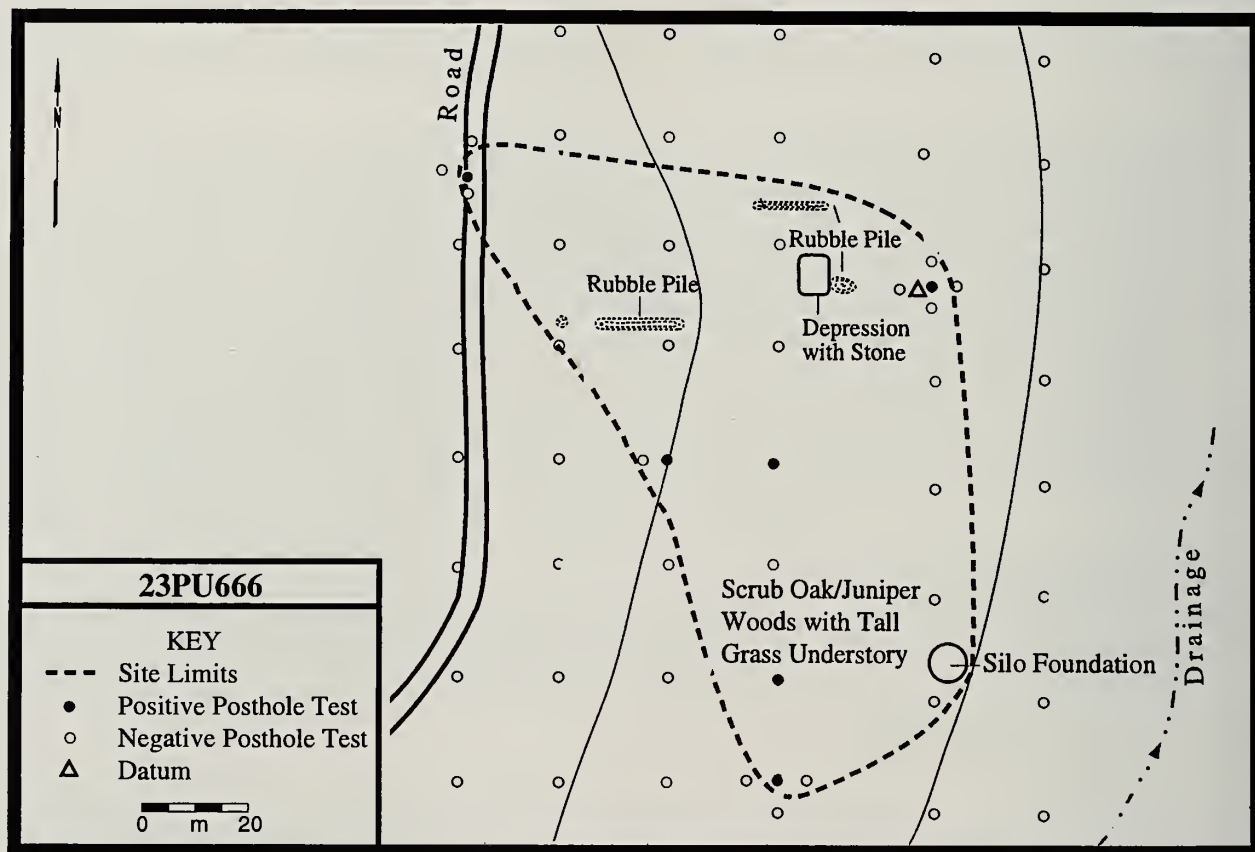


Figure 63. Sketch Map of 23PU666.

Site Number: 23PU667 (95-45: AOS 173)

USGS Quadrangle: Bloodland 7.5'

Site Type: Lithic Debris Scatter

Soil Type: Viraton silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendations: Potentially Eligible

This prehistoric lithic debris scatter site is located on the east slope of a narrow upland ridge lobe, near the ridge crest (Figure B2). The site is located just north of previously recorded site 23PU241, and occupies a lobe that extends north of the main central upland ridge. This ridge lies between Hurd Hollow, which is to the northeast and Roubidoux Creek, which is to the southwest. A ravine borders the site area to the east while a jeep trail is present to the west. The site is located in a pine forest that had no ground surface visibility at the time of survey. The closest water supply is Hurd Hollow, 400 m to the north.

The linear site is defined on the basis of 21 positive posthole tests covering an area 185 m north-south by 25 m east-west (Figure 64). Additional material was not located within the bracketing

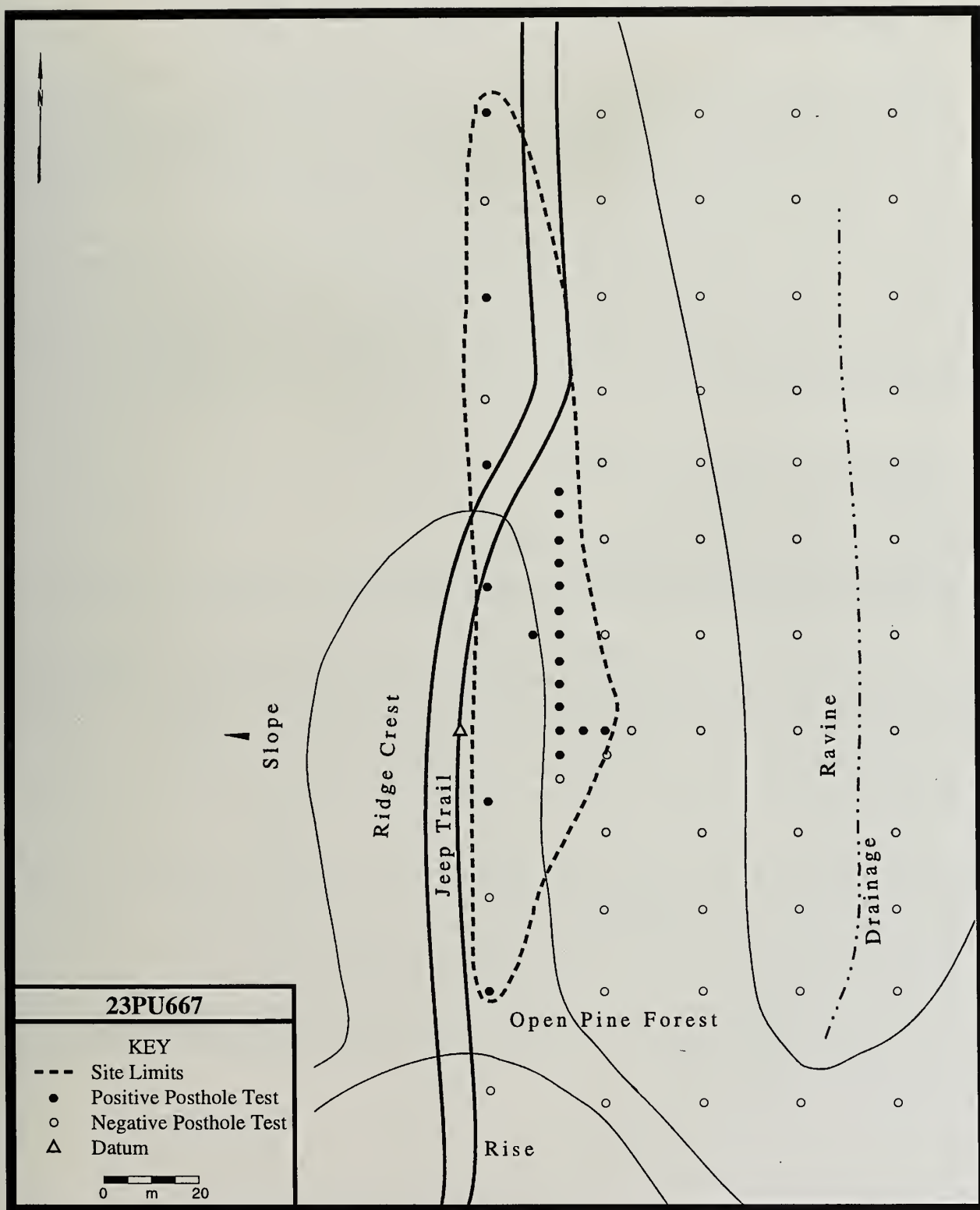


Figure 64. Sketch Map of 23PU667.

postholes or on the surface. Soil stratigraphy varied greatly across the site. An Ap horizon (plow zone) was identified over the site area that ranges from 15–30 cm thick. Below this, when present, is a 10–15-cm thick E horizon followed by the B horizon. In all, 61 artifacts were found in the posthole tests, consisting of various flake and shatter categories. The material included 30 broken flakes, 19 tertiary flakes, seven bipolar flakes, three secondary flakes, one primary flake, and one piece of block shatter. Slightly over one-half (n=31) of the artifacts were recovered in the plow zone, while 20 items were found in the E horizon (Table 12). The remainder were either found on the surface or in uncertain contexts. Clearly, while this site has been impacted by plowing and subsequent erosion, material is present in an undisturbed E horizon. This material includes a wide variety of lithic flake categories. Given the presence of intact deposits containing one-third of the items found at this site, it is recommended as potentially eligible for listing in the NRHP. Phase II investigations should be undertaken at this site.

Site Number: 23PU668 (95–45: AOS 174)

USGS Quadrangle: Bloodland 7.5'

Site Type: Lithic Debris Scatter

Soil Type: Viraton silt loam, 3–9 percent slopes

Component(s): Unknown Prehistoric

Recommendations: Not Eligible

Site 23PU668 is located on the same upland ridge spur as 23PU667 and 23PU669, both located to the south (Figure B2). This upland spur is part of a larger upland ridge that is situated between Roubidoux Creek to the southwest and Hurd Hollow to the northeast. Hurd Hollow is the closest source of water, situated 290 m to the north at its closest point. The site is located on the north face of the upland ridge spur. Four circular depressions, which appear to be foxholes, were located immediately south of the site. The area is within a planted pine forest with no surface visibility.

Three positive posthole tests were excavated at this location. Based on the extent of these tests, this site is a roughly 10-m diameter circle (Figure 65). The three positive posthole tests produced prehistoric lithic debitage to depths of 20 cm below surface. Site stratigraphy consists of an Ap horizon (plow zone) to between 20 cm and 30 cm below surface, followed by the B horizon. All artifacts were recovered from the plow zone. The material found includes single examples each of tertiary, primary, broken, and bipolar flakes. Given the presence of an Ap to B horizon transition at this site and that all artifacts were found in the Ap horizon, it is probable that no intact deposits exist at 23PU668. Given the lack of integrity at this site, it is not eligible for listing on the NRHP. No additional work is recommended for this site.

Table 12. Distribution of Artifacts Collected from 23PU667.

<i>Soil Horizon</i>	<i>Thickness of Horizon</i>	<i>Number of Artifacts</i>
Ap	15-30 cm	31
E	0-15 cm	20
Ap or E	See Above	4
Surface	—	1
Uncertain	—	5

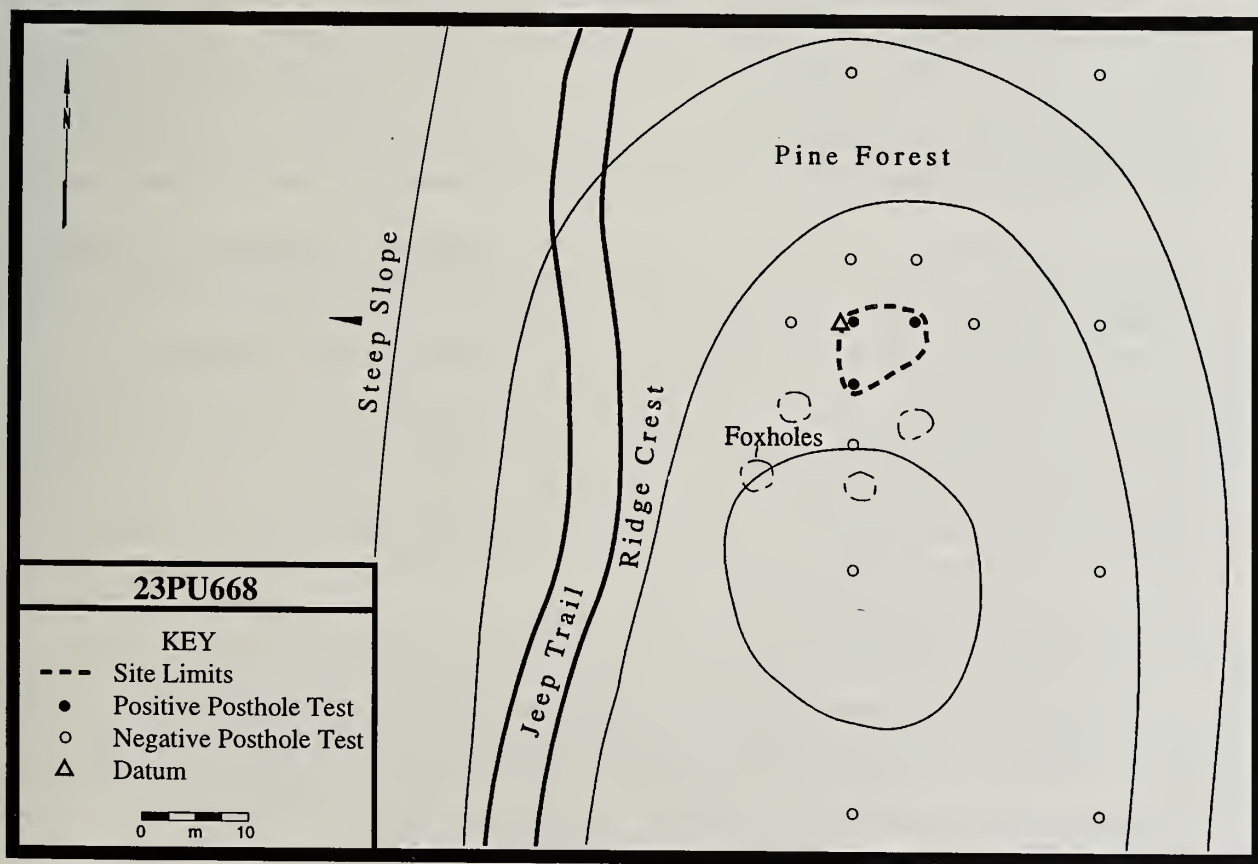


Figure 65. Sketch Map of 23PU668.

Site Number: 23PU669 (95-45: AOS 181)
USGS Quadrangle: Bloodland 7.5'
Site Type: Lithic Debris Scatter
Soil Type: Viraton silt loam, 3-9 percent slopes
Component(s): Unknown Prehistoric
Recommendations: Not Eligible

This lithic debris scatter is located on a west-facing slope of a north-oriented lobe upland ridge that is situated between Roubidoux Creek to the southwest and Hurd Hollow, 320 m to the northeast (Figure B2). The lobe is a part of a large upland ridge on which 23PU241, which lies to the south, is located. Ravines that empty into Hurd Hollow are present on both the east and west sides of the upland lobe. Immediately east of the site is a jeep trail. At the time of investigation the area contained a mixture of oak and pine. There was no surface visibility due to undergrowth and leaf litter.

The site was identified by ten positive posthole tests. Based on the distribution of these positive tests, a irregularly shaped site area measuring approximately 85 m north-south by 20 m east-west was defined (Figure 66). Generally, soil profiles consisted of a 20-cm Ap horizon (plow zone) followed by a 10-cm thick E horizon, although in Posthole 8, a 20-cm E horizon was identified. The B horizon was generally encountered at 30 cm below surface. A total of 25 artifacts was recovered from the 10 positive tests. These include 16 broken flakes, five tertiary flakes, two primary flakes, one secondary flake, and one bipolar flake. Of this total, 24 were recovered from the plow zone and one was found in the E horizon. Given that most material was recovered from the plow zone, it is probable that most of the original E horizon deposits have been disturbed by plowing. The remaining intact E horizon deposits appear to contain a light concentration of flakes.

Based on the degree of agricultural disturbance that has impacted the integrity of deposits at the site and the limited number and range of artifacts collected from intact deposits at the site, it is likely that additional investigations would only recover redundant data. Therefore, this site is recommended to be not eligible for listing in the NRHP. No additional investigations are warranted.

Site Number: 23PU670 (95-45: AOS 182)
USGS Quadrangle: Bloodland 7.5'
Site Type: Lithic Debris Scatter
Soil Type: Viraton silt loam, 3-9 percent slopes
Component(s): Unknown Prehistoric
Recommendations: Not Eligible

Site 23PU670 is located on an east-facing slope of an upland ridge lobe (Figure B2). The upland ridge is situated between Roubidoux Creek to the southwest and Hurd Hollow to the northeast. A ravine that empties into Hurd Hollow is to the east of the site. The current vegetation cover in this area is pine forest with no ground surface visibility. Hurd Hollow, at 370 m to the northeast, is the closest source of water.

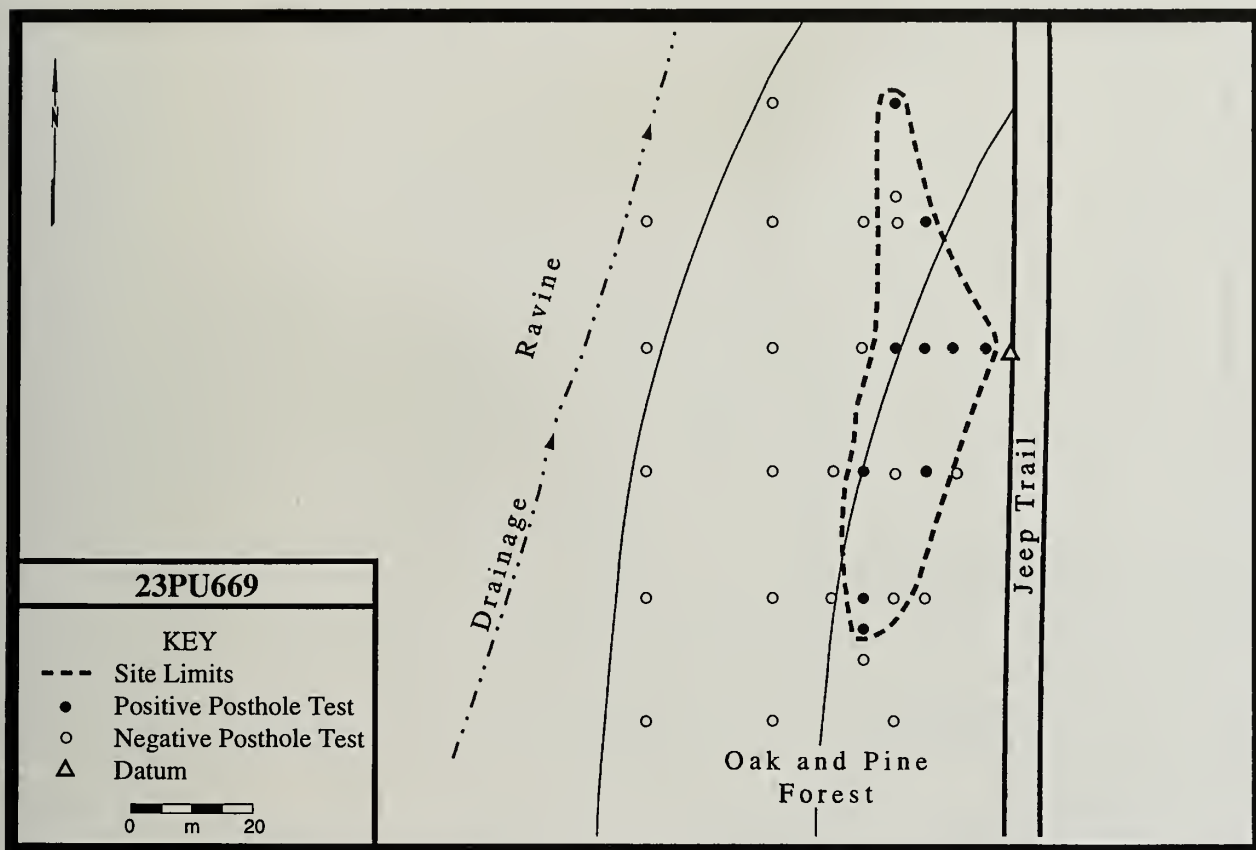


Figure 66. Sketch Map of 23PU669.

The site consists of five positive posthole tests oriented in a northeast-southwest direction, resulting in an oblong-shaped site that measures approximately 40 m northeast-southwest by 30 m northwest-southeast (Figure 67). Bracketing subsurface tests did not recover additional artifacts. Site stratigraphy consists of a 13–20-cm thick Ap horizon (plow zone), while an E horizon, about 10 cm thick, was identified in only two of five positive posthole tests. Seven artifacts were recovered from the five positive tests, mostly consisting of tertiary and broken flakes, although one blade also was found. Of these seven artifacts, six were located in the plow zone and only one in the E horizon.

This area has been impacted by agricultural plowing and resultant erosion. These processes have in turn destroyed the intact archaeological deposits over much of the site area. The remaining intact E horizon deposits appear to contain a light concentration of flakes. Based on the degree of agricultural disturbance and erosion that has impacted the integrity of deposits at the site and the limited number and diversity of artifacts collected from intact deposits at the site, it is likely that additional investigations would recover only redundant data. Therefore, this site is considered not eligible for listing in the NRHP. No additional investigations are warranted.

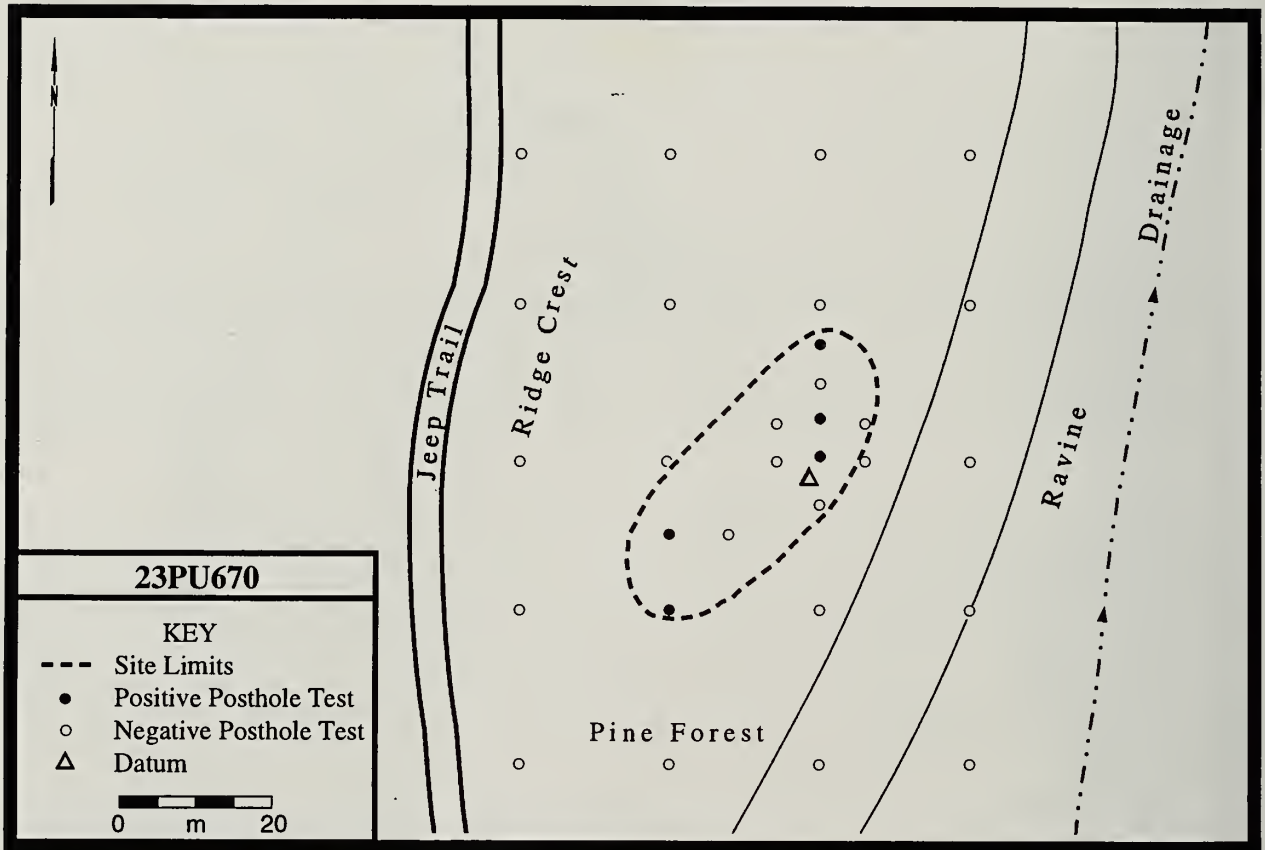


Figure 67. Sketch Map of 23PU670.

Site Number: 23PU671 (95-45: AOS 184)

USGS Quadrangle: Bloodland 7.5'

Site Type: Lithic Debris Scatter

Soil Type: Viraton silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendations: Not Eligible

This lithic debris scatter was identified on the west slope of a large upland ridge situated between Roubidoux Creek to the southwest and Hurd Hollow to the northeast (Figure B2). The site is on a west-facing slope just below the ridge crest. A ravine that empties into Hurd Hollow is to the west of the site while a jeep trail runs along the ridge crest to the east. At the time of survey the area was a pine forest with no surface visibility. Hurd Hollow, the closest source of water, is 260 m to the northeast.

Six positive posthole tests were excavated at this site. An irregular site area with maximum dimensions of 15 m north-south by 10 m east-west was defined (Figure 68). Bracketing posthole tests were negative. Soil stratigraphy in the site area consists of a 10-20-cm thick Ap horizon (plow zone)

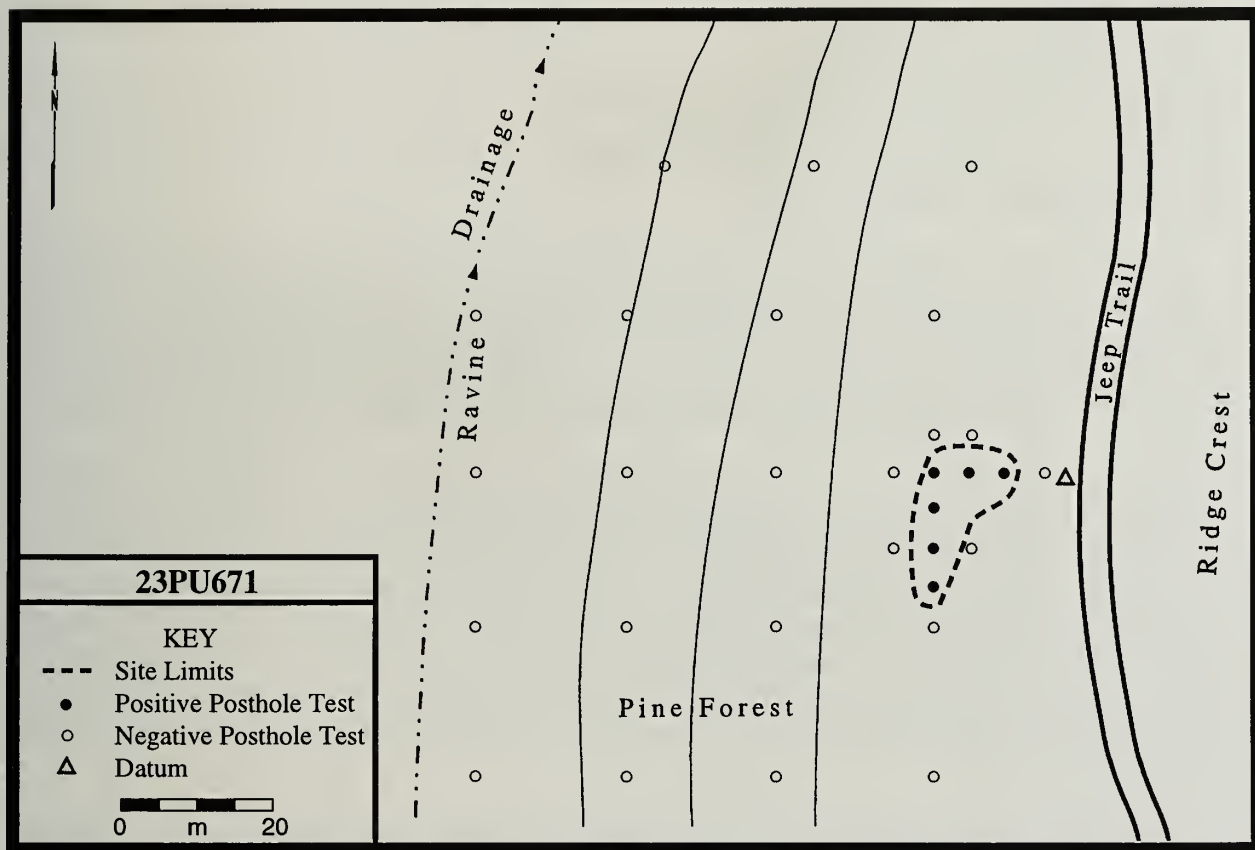


Figure 68. Sketch Map of 23PU671.

followed by a 10–20-cm thick E horizon. Variation in the depths of both the Ap and E horizons appear to be due to erosion. Ten artifacts were recovered from the positive tests, all of which are identified as broken flakes. Of the ten, five were found in the plow zone, one in either the plow zone or E horizon, and four in the E horizon. This area has been impacted by agricultural plowing and resultant erosion. These processes have in turn destroyed much of the intact archaeological deposits at this site. The remaining intact E horizon deposits appear to contain a light concentration of flakes.

Based on the degree of agricultural disturbance and erosion that has impacted the integrity of deposits at the site and the limited number and range of artifacts collected from those intact deposits, additional investigations probably would recover only redundant data. This site is recommended as ineligible for listing in the NRHP. No additional investigations are warranted.

Site Number: 23PU672 (95-45: AOS 187)

USGS Quadrangle: Bloodland 7.5'

Site Type: Residence/Farmstead—Lithic Debris Scatter

Soil Type: Viraton silt loam, 3-9 percent slopes

Component(s): Unknown Historic/Unknown Prehistoric

Recommendations: Potentially Eligible

This site has both prehistoric and historic components and is located on the crest of an upland lobe (Figure B2). The lobe is a part of a larger upland ridge that lies between Hurd Hollow to the northeast and Roubidoux Creek to the southwest. Ravines that drain into Hurd Hollow are present on both the east and west sides of the lobe. Hurd Hollow is the closest source of permanent water and is 300 m away. The current vegetation at this location consists of oak and juniper with no surface visibility.

The site boundaries are based on the distribution of eight positive posthole tests and historic architectural remains (Figure 69). The site measures approximately 50 m north-south by 20 m east-west. The prehistoric component consists of chert chipping debris to depths of 20 cm below surface. Soil stratigraphy in the site area consisted of a 10-cm thick historically disturbed A horizon and a 10-20-cm thick E horizon. In two instances the A horizon was missing and presumably has eroded away. A total of 16 artifacts was recovered from the eight subsurface tests. These included 10 broken flakes, three tertiary flakes, one bipolar flake, one secondary flake, and one blade. Of this total, five were recovered from the disturbed A horizon, eight from the E horizon, and three from unknown contexts (Table 13).

The historic component at this site consists of three foundations made from concrete, sandstone and limestone blocks. Foundations measure 3-x-4 m at the northmost structure, 8-x-3 m for the central structure, and 1-x-5 m for the southernmost structure. Metal debris was observed around these foundations that does not appear to be of military origin. No historic artifacts were collected from this site. Historic aerial photographs from the 1930s and 1940s do not depict an historic building cluster at this location. Neither is a structure plotted in this area on the 1948 Waynesville 15' quadrangle map. This site may predate the 1930s based on its absence from these later historic documents.

The positive posthole tests which produced prehistoric artifacts were located at the north and south edges of the site. This suggests that the historic site may have been located within the central part of the prehistoric site. If so, the prehistoric site has been severely impacted by the construction of the historic structures. The historic foundations are relatively well-preserved, and there does not appear to have been any significant disturbance of the historic component. Still, a majority of the prehistoric artifacts were recovered from intact deposits, and Phase II evaluation of this component is recommended. The Phase II investigation should focus on mapping the rockshelter, documenting previous disturbance of the archaeological deposits, determining if intact features are present by means of test unit excavations, and on recovering diagnostic artifacts and environmental data.

Although the historic component appears to be relatively intact, there is no evidence that it predates the twentieth century. Given that surviving examples of sites dating to this period are present in the Ozarks, it is unlikely that additional data from the site could be used to address questions of regional or local significance. No additional work is recommended for the historic component of this site.

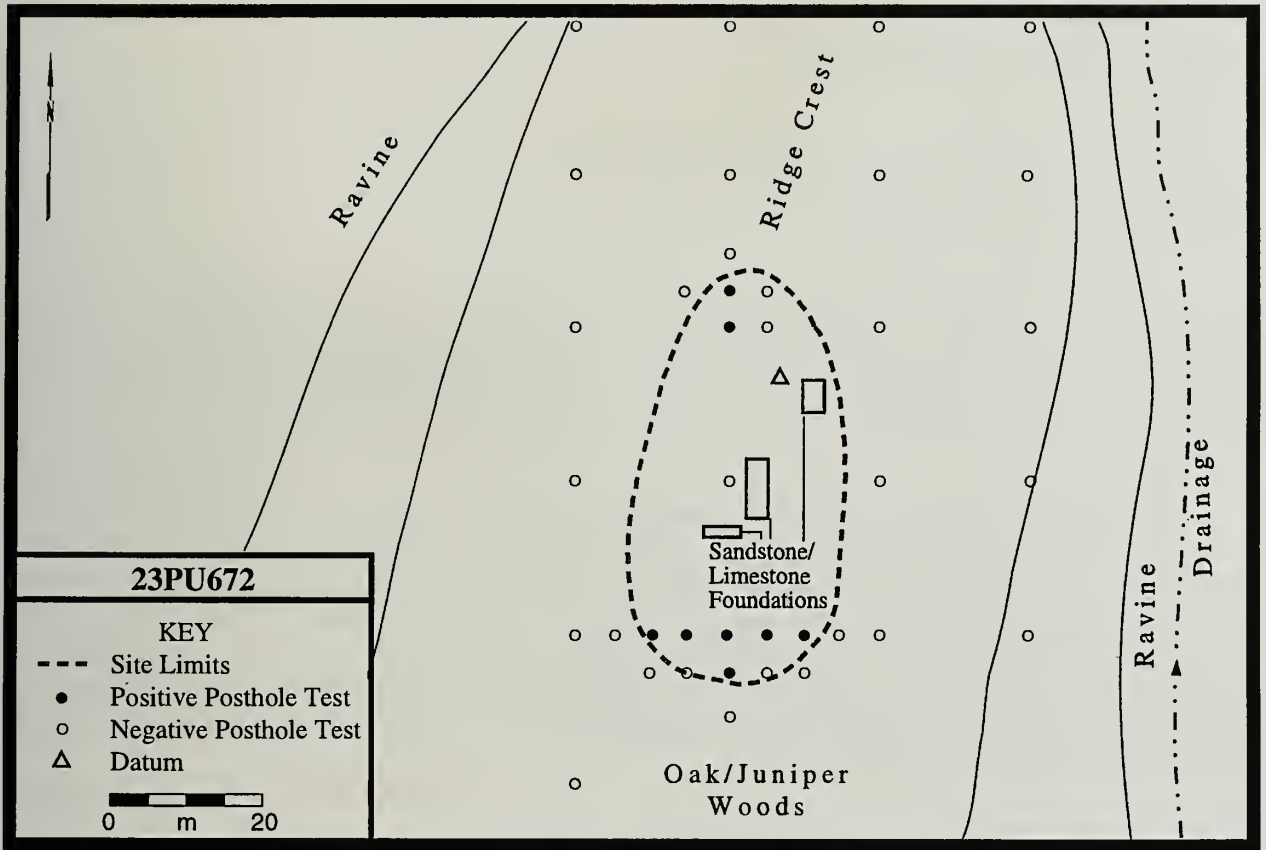


Figure 69. Sketch Map of 23PU672.

Table 13. Distribution of Artifacts Collected from 23PU672.

<i>Soil Horizon</i>	<i>Depth of Artifacts</i>	<i>Number of Artifacts</i>
A	0–10 cm	5
E	10–30 cm	8
Uncertain	—	3

Site Number: 23PU675 (95-45: AOS 139)
USGS Quadrangle: Bloodland 7.5'
Elevation: 331 m asl
Site Type: Lithic Debris Scatter
Soil Type: Viraton silt loam, 3-9 percent slopes
Component(s): Unknown Prehistoric
Recommendation: Not Eligible

This site is located on a broad, upland ridge that trends east-west on the east side of Roubidoux Creek (Figure B2). The ridge is bordered on the north and south by ravines that drain to the west into the Roubidoux Creek valley, the closest of which is approximately 140 m to the southwest. The site is located in a pine plantation midway between the two unnamed drainages. There was no surface visibility at the site.

Two positive posthole tests were excavated at this site, defining an oval-shaped area 20 m north-south by 10 m east-west (Figure 70). Three broken flakes and a tertiary flake were recovered from two posthole tests. Soil profiles indicate the site area is plowed, with a 30-35-cm thick Ap horizon (plow zone) overlying the B horizon. All artifacts were recovered from the initial 10 cm of the plow zone. No other material was recovered from the surrounding 10-m grid of posthole tests or the surface. This location is recommended as ineligible for the NRHP based on the presence of Ap-B horizon soil transition, poor site integrity, and the limited number of artifacts recovered. No additional investigations are recommended.

Site Number: 95-45: AOS 146
USGS Quadrangle: Bloodland 7.5'
Elevation: 331 m asl
Site Type: Isolated Find
Soil Type: Viraton silt loam, 3-9 percent slopes
Component(s): Unknown Prehistoric
Recommendation: Not Eligible

This isolated find was located on an upland ridge on the east side of Roubidoux Creek (Figure B2). The isolated find is located in a planted pine forest adjacent to a gravel road with no surface visibility. Soil profiles indicate the location is plowed. One broken flake and one tertiary flake were located in the plow zone of two posthole tests (Figure 71). No other material was found in the surrounding 10-m grid posthole tests. This location is recommended as ineligible for the NRHP based on the limited artifacts recovered and the impacted integrity of the location due to agricultural disturbance. No additional investigations are recommended.

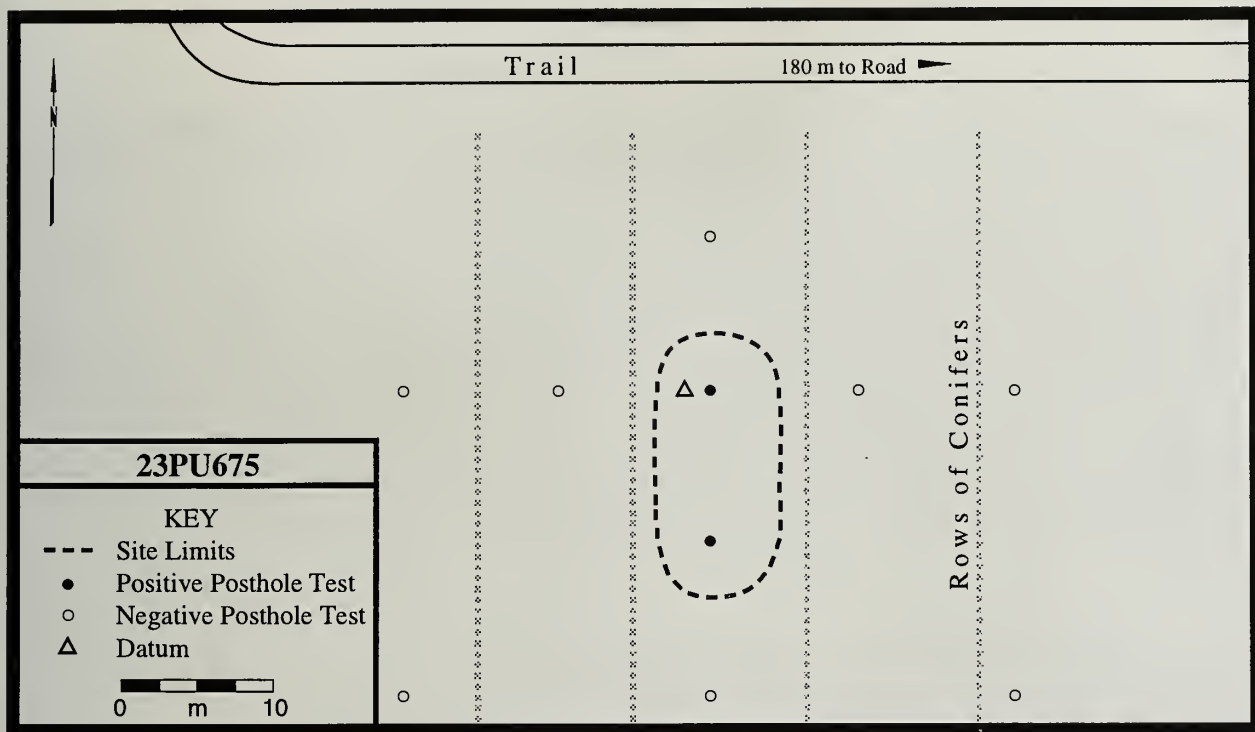


Figure 70. Sketch Map of 23PU675.

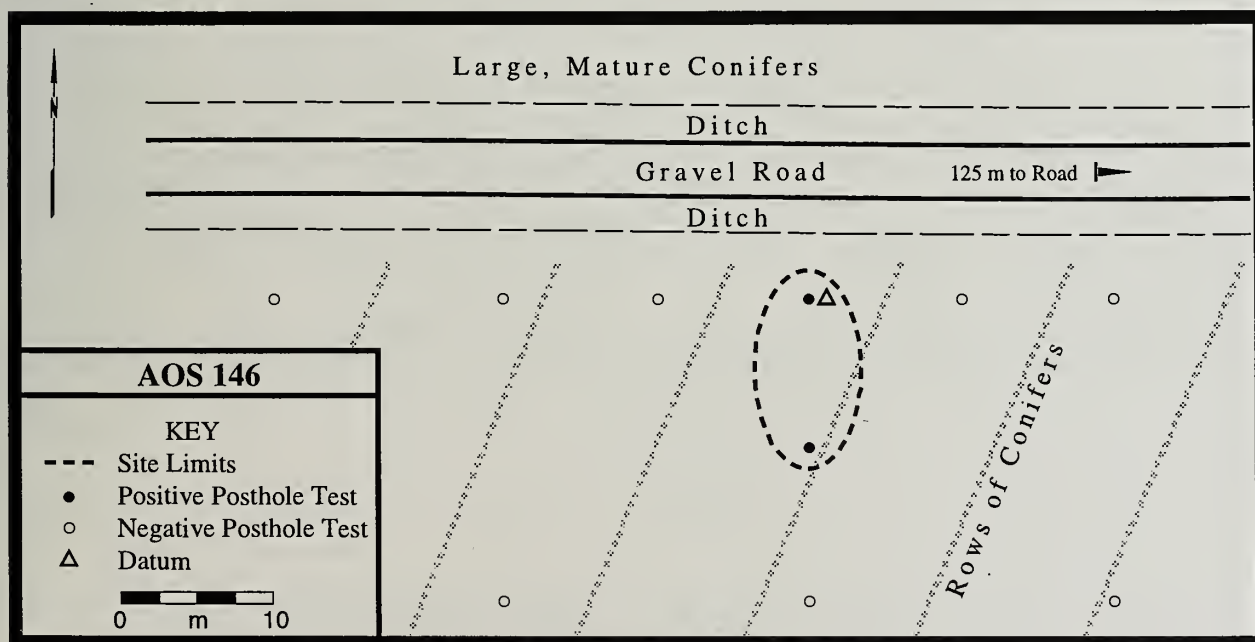


Figure 71. Sketch Map of 95-45: AOS 146.

The Quarry Timber Sale Tract

The Quarry Timber Sale Tract is located to the west of the Big Piney River in the east part of Fort Leonard Wood and is comprised of four parcels, totaling 882 acres (356.9 ha) (Figures 72 and 73). All the parcels are located in the Big Piney cultural resource zone. Two of the parcels are located west of the Big Piney River in an area characterized by dissected upland ridges that are separated by deeply cut intermittent streams. The other two parcels are located east of the Big Piney River. These also lie in an area of highly dissected uplands ridges that overlooks the floodplain of the Big Piney River. One parcel is located in Section 1 of Township 34 North, Range 11 West; Section 6 of Township 34 North, Range 10 West; Section 36 of Township 35 North, Range 11 West; and Section 31 of Township 35 North, Range 10 West. The second parcel lies in sections 31 and 32 of Township 35 North, Range 10 West, and the third parcel is located in sections 26 and 35 of Township 35 North, Range 11 West. The fourth parcel is in sections 35 and 36 of Township 35 North, Range 11 West and sections 1 and 1 of Township 34 North, Range 11 West. Five sites had been recorded previously within the survey tract, all of which were relocated. As a result of the survey, two prehistoric sites, one historic site and two prehistoric isolated finds were newly identified in this tract.

Site Number: 23PU288

USGS Quadrangle: Big Piney 7.5'

Elevation: 308–316 m asl

Site Type: Lithic Tool and Debris Scatter

Soil Type: Doniphan very cherty silt loam, 3–9 percent slopes

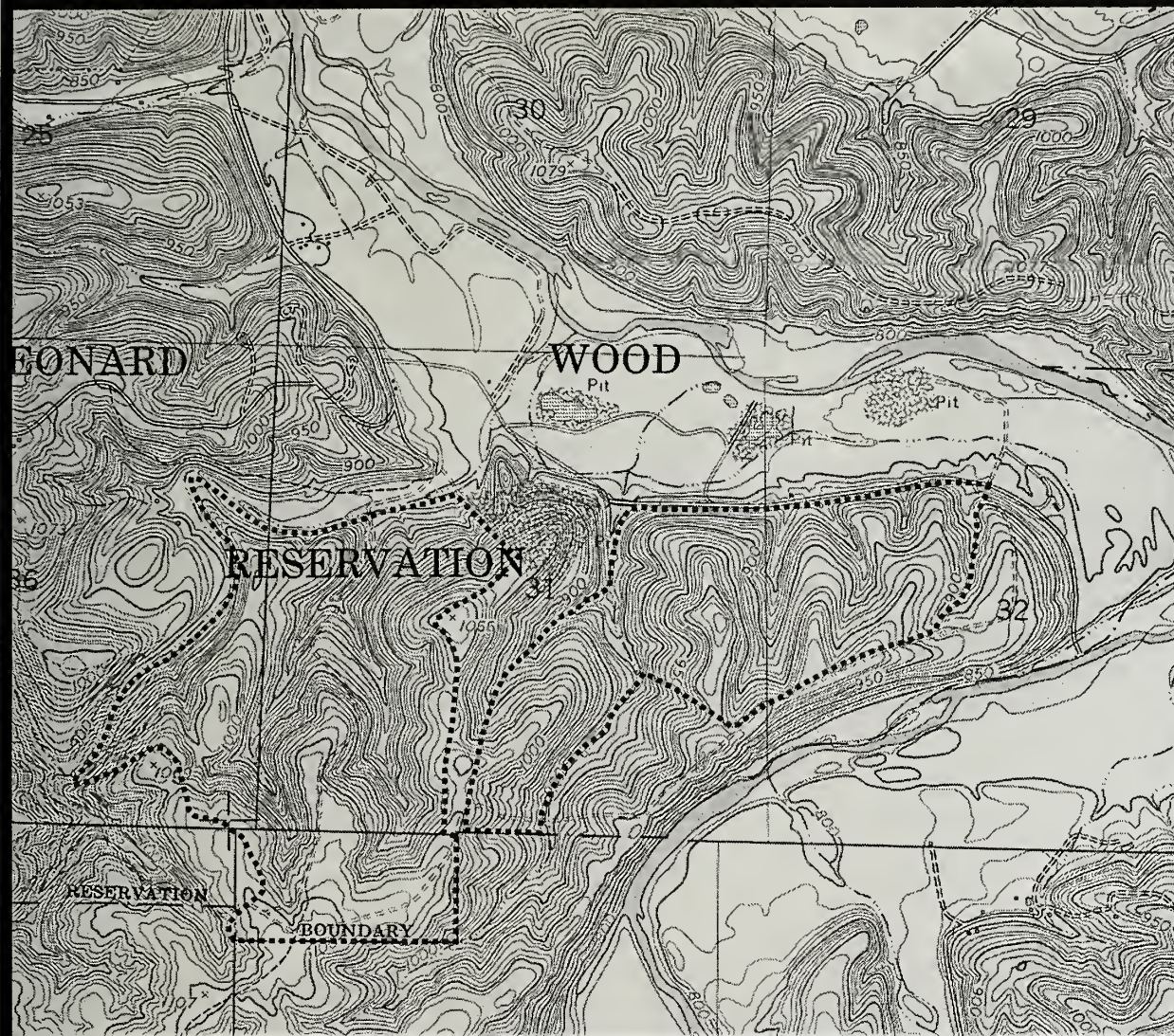
Component(s): Middle and Late Archaic; Middle and Late Woodland

Recommendation: Eligible

This open-air site was first identified by Fowke (1922), who speculated it might be a base camp associated with Miller Cave (23PU2). It was registered with the ASM by Niquette in 1982 and was further investigated by Moffat et al. (1989). Phase II investigations were conducted by the University of Illinois at Urbana-Champaign during 1994–1995. The site is located on a large, dissected upland ridge above the Big Piney River in an oak forest with little ground cover or undergrowth (Figure B3). Thirty percent of the site has been disturbed by road construction and foxhole excavation.

Niquette had not recovered temporally diagnostic artifacts, but intensive shovel tests excavated by the American Resources Group (Moffat et al. 1989) resulted in the collection of 227 lithics, including three projectile points characteristic of the Middle Woodland and Late Archaic periods. Phase II excavations were undertaken to determine whether the site was eligible for listing in the NRHP. The Phase II investigations consisted of topographic mapping and the excavation of 51 posthole tests, three 1-x-1-m test units and one 50-x-50-cm test unit. In all, 2,513 artifacts consisting of lithic debitage and tools were recovered from the excavations. Temporally diagnostic artifacts included a possible Middle Woodland Snyders *Affinis* point (Winters 1967), Late Woodland Scallorn Cluster arrow points, a projectile point similar to Late Woodland SS5 examples (McMillan 1965; Roberts 1965), and a reworked Middle to Late Archaic Stone Square Stemmed projectile point.

BIG PINEY QUADRANGLE
MISSOURI
7.5 MINUTE SERIES (TOPOGRAPHIC)



KEY

..... Survey Limits



Figure 72. Location of the Eastern Portion of the Quarry Timber Sale Tract.

BIG PINEY QUADRANGLE
MISSOURI
7.5 MINUTE SERIES (TOPOGRAPHIC)



QUADRANGLE LOCATION

KEY

..... Survey Limits

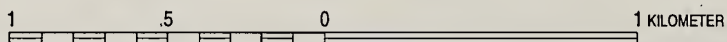


Figure 73. Location of the Western Portion of the Quarry Timber Sale Tract.

The Phase II investigations revealed that intact, spatially discrete, cultural deposits are present at 23PU288. It appears to have been used as a short-term habitation site, at least during the Late Woodland period (Kreisa 1995:100). Temporally, at least, the site is linked with other sites in the Miller Cave Complex (23PU2, 23PU3, 23PU4, 23PU235). The site was recommended as eligible for listing in the NRHP.

One row of posthole tests in the 1995–1996 survey crossed the northeast corner of the site (Figure 74). Artifacts recovered from the A horizon of three posthole tests include a uniface, six broken flakes and one piece of block shatter. Visual inspection indicates that site condition has not changed since the Phase II excavations. No additional documentation was completed since the site already has been recommended as eligible for the NRHP.

Site Number: 23PU363

USGS Quadrangle: Big Piney 7.5'

Elevation: 314–320 m asl

Site Type: Lithic Tool and Debris Scatter

Soil Type: Doniphan very cherty silt loam, 3–9 percent slopes; Clarksville-Gepp very cherty silt loams, 14–35 percent slopes

Component(s): Middle Woodland

Recommendation: Potentially Eligible

This site originally was identified by Moffat et al. (1989:142–146) who defined it as an open-air site on an upland ridge crest, 300 m west of an intermittent drainage of the Big Piney River (Figure B3). Surface visibility ranged from 40–50 percent in the oak-hickory forest in which the site is located. A jeep-trail bisects the site, which measures 210 m north-south by 70 m east-west. Two areas of higher artifact concentration were identified, which Moffat et al. (1989) suggest are correlated with areas of soil development. Investigations included a surface collection and the excavation of shovel tests, five of which were positive. In all, 123 artifacts were recovered, including two Snyders Corner Notched projectile points, biface fragments, utilized flakes, scrapers, cores, and lithic debitage. The site was interpreted as a seasonally occupied field camp.

The site was revisited during the current investigations (Figure 75). Oak-hickory forest with a mixed understory covers the area, limiting visibility to 25 percent at most. Surface visibility on the two-track road that bisects the site was 100 percent. Artifacts collected from the surface of the two-track road consist of a nondiagnostic projectile point tip, a secondary flake and a 1984 five-cent piece. Noted across the site area, but not collected, were approximately 100 pieces of lithic debris. The site does not appear to have been impacted since it was first recorded.

Given the diversity of artifacts recovered, including temporally diagnostic projectile points, the site's location in the uplands away from water (atypical of larger sites in this region), and the potential for intact deposits, the site may be eligible for listing in the NRHP. Phase II evaluation is recommended.

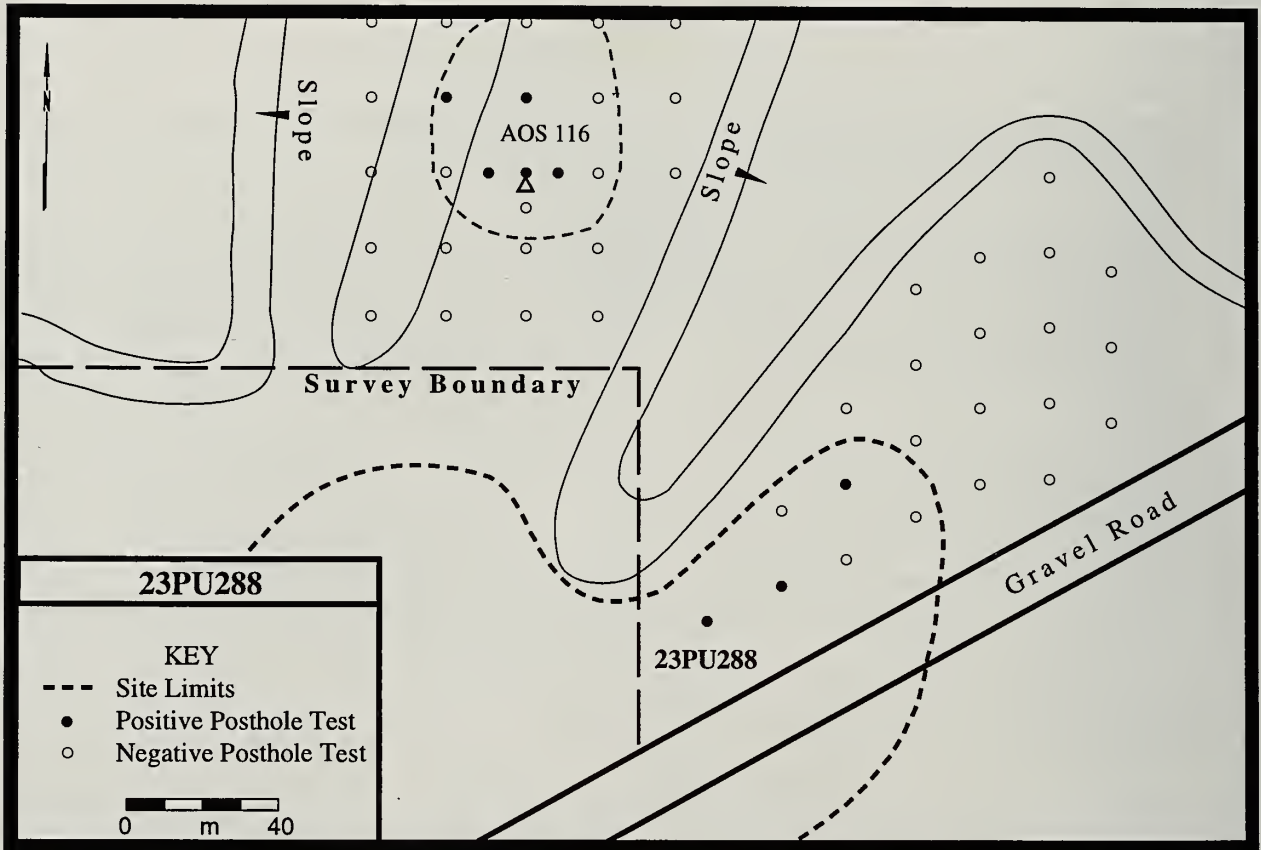


Figure 74. Sketch Map of 23PU288.

Site Number: 23PU368

USGS Quadrangle: Big Piney 7.5'

Elevation: 274–289 m asl

Site Type: Lithic Tool and Debris Scatter

Soil Type: Clarksville-Gepp very cherty silt loams, 3–9 percent slopes

Component(s): Middle and Late Archaic; Late Woodland; Late Prehistoric

Recommendation: Eligible

This site originally was identified by Moffat et al. (1989:152–154) and described as an open-air camp site on a terrace in a small hollow west of the Big Piney River (Figure B4). The site is located in a mixed floodplain forest with little undergrowth, 120 m north of the Big Piney River. In all, 238 artifacts were recovered from shovel tests placed across the site, including temporally diagnostic projectile points, biface fragments, side scrapers, a perforator, and debitage. The projectile points were characteristic of Middle Archaic through Middle or Late Woodland period forms. Phase II excavations were conducted by the University of Illinois at Urbana-Champaign in 1994 to determine the site's NRHP eligibility (Ahler, Kreisa, McDowell, and McGowan 1995).

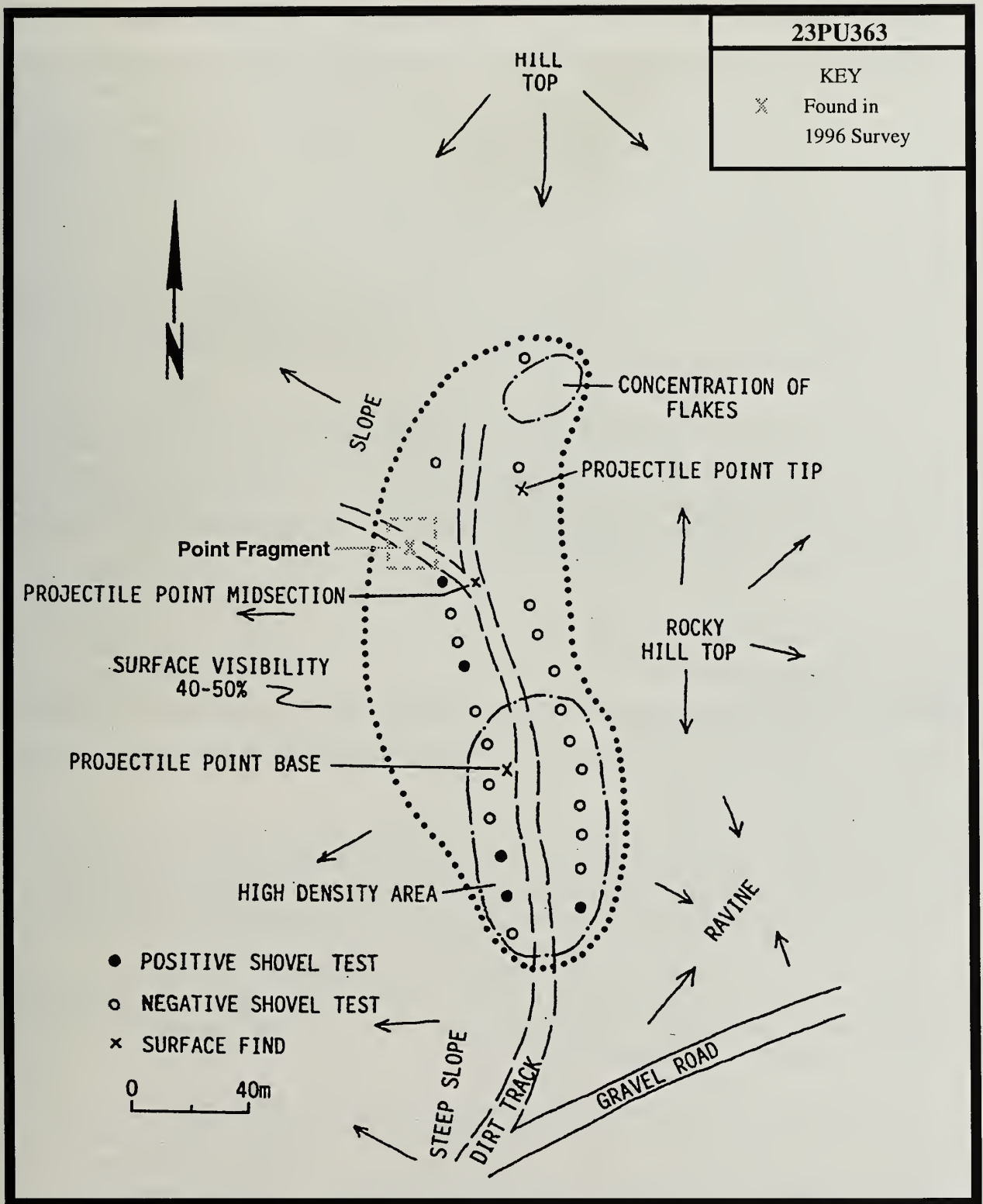


Figure 75. Sketch Map of 23PU363 (after Moffat et al. 1989:146).

The Phase II excavations included topographic mapping and the excavation of 11 posthole tests and two 1-x-1-m test units. As a result of this work, the original site boundaries were expanded to 70 m east-west by 75 m north-south. Artifacts were recovered from both plow zone and intact soil deposits. In all, 1,620 prehistoric and five historic artifacts were recovered. Lithic debitage dominates the assemblage, but bifacial and unifacial tools and one prehistoric sherd (probably Maramec series) also were found. The diagnostic projectile points include a Middle Archaic Table Rock Stemmed point, a Late Archaic Etley-like point, two Late Woodland Scallorn Cluster points, and a Middle to Late Woodland King's Corner Notched point. The debitage is comprised mainly of late-stage reduction categories. The excavations indicate that intact, stratified cultural deposits are present. The location of this Late Woodland site on a small terrace in a side drainage is not typical of other Late Woodland period sites in the area. Given the intact deposits and uncharacteristic location, 23PU368 was recommended as eligible for listing in the NRHP.

The site was relocated during the current investigations (Figure 76). One line of postholes fell along one edge of the site. Eight artifacts were recovered from one posthole test: two broken flakes from the Ap horizon, four whiteware sherds from the A/E horizon, one piece of block shatter from the E horizon, and one broken flake from the B horizon. Visual inspection of the site indicates no change from the Phase II excavations. Since the site already had been recommended as eligible for the NRHP, no additional documentation was prepared.

Site Number: 23PU515 (J. J. Pillman site)

USGS Quadrangle: Big Piney 7.5'

Elevation: 271 m asl

Site Type: Residence/Farmstead

Soil Type: Doniphan very cherty silt loam, 14–35 percent slopes

Component(s): 19th/20th Century

Recommendation: Not Eligible

This site was recorded with the ASM by Fort Leonard Wood personnel in 1994. The site was described as a late nineteenth/early twentieth century historic residence/farmstead (Figure B3). It is located in an oak forest in the uplands overlooking the Big Piney River valley, situated in a bend in the river. The river is 400 m from the site. The site appears on the 1938 aerial photograph of the Fort Leonard Wood area; the house is visible on the point, and the outbuildings are present in the hollow to the east. No structure was identified in the field, but a high density of artifacts on the point and east slope was noted. Site area was defined as 50-x-50 m. The site is recorded on the 1890–1900 Pulaski County Map as the J. H. Pillman residence.

The site was relocated during the 1995–1996 field season (Figure 77). Vegetation consisted mainly of oaks (90 percent) and junipers (10 percent), providing 10 percent surface visibility. A possible cellar is located at the north end of the site. Cultural material noted, but not collected, on the surface included roofing material, car parts, and assorted can and bottles. Six artifacts were recovered from one posthole test: three plain bottle panels, one piece of clear flat glass, one piece of lamp glass, and one wire-cut nail.

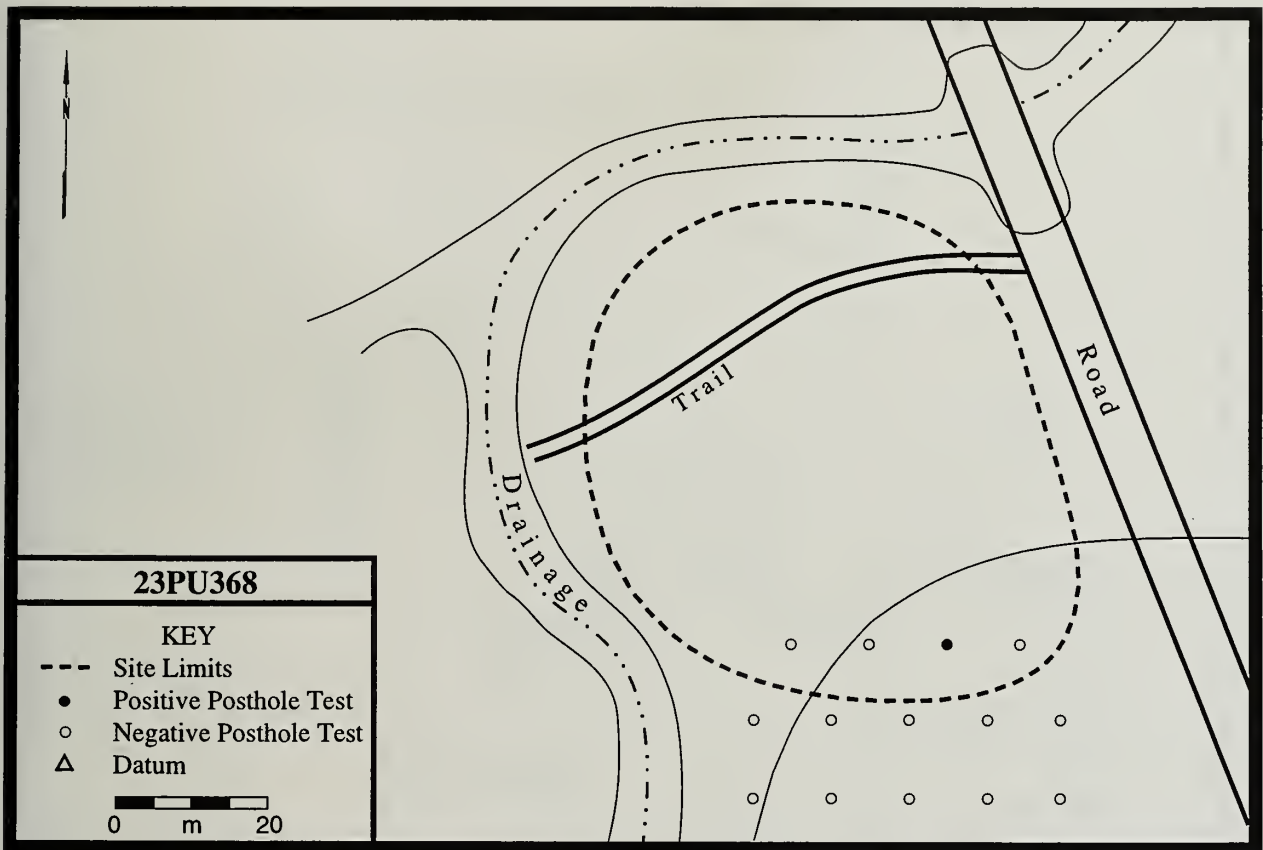


Figure 76. Sketch Map of 23PU368.

Given the recent age and nature of the site, it is not considered eligible for listing in the NRHP. Extant farmsteads which began during this period, or even before, are present in the Ozarks. This site is unlikely to yield information for answering questions of significant local or regional interest. No additional work is recommended.

Site Number: 23PU516 (Jack Carroll site)

USGS Quadrangle: Big Piney 7.5'

Elevation: 297 m asl

Site Type: Historic Residence/Farmstead

Soil Type: Lebanon silt loam, 2-5 percent slopes

Component(s): 19th/20th Century

Recommendation: Not Eligible

This site was identified originally by Fort Leonard Wood personnel and reported to the ASM in 1994 (Figure B3). It was described as a late nineteenth/early twentieth century historic farmstead located in the uplands west of the Big Piney River. An unnamed drainage flows 200 m from the site.

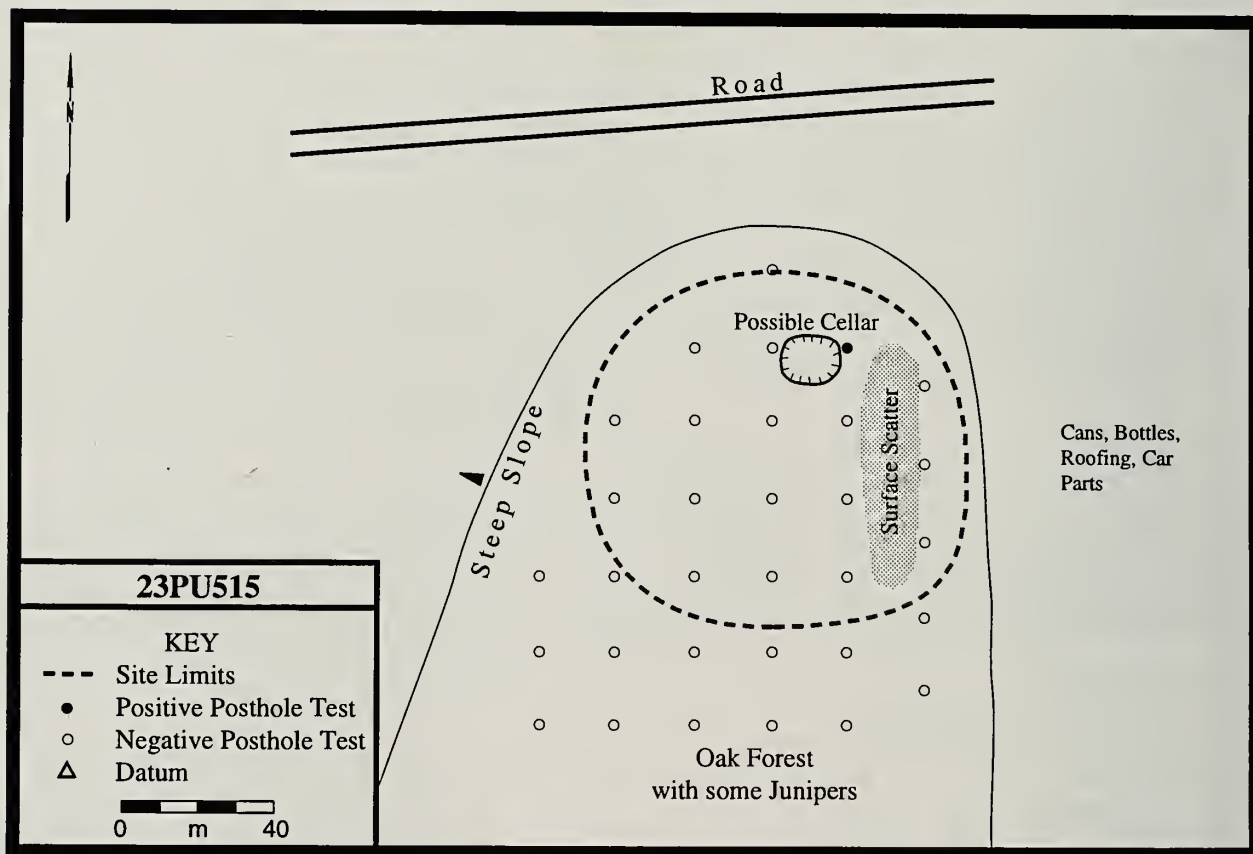


Figure 77. Sketch Map of 23PU515.

Site area was defined as 50-x-50 m. It consisted of a concrete foundation with an adjoining cellar depression, a stone cistern and a concrete tank. Although the 1938 aerial photograph for the area indicates an outbuilding to the east of the house, no evidence of a structure was found in that location. The site is identified on the 1948 Fort Leonard Wood acquisition map as the Jack Carroll residence.

The site was relocated during the current investigations (Figure 78). Vegetation consisted of scrub woods and poison ivy, providing little surface visibility. Intensive pedestrian reconnaissance, however, resulted in the relocation of the concrete foundation with cellar depression, the stone cistern and small concrete foundation. Historic metal, ceramics and glass debris were scattered about the foundations, extending up to 50 m north of the main foundation. The stone cistern is intact, but the other structural remains are not as well-preserved. There has been no apparent change in condition since the site was recorded.

Based on the recent age and nature of the site, no additional work is recommended. It is unlikely that information significant to questions of local and regional interest could be acquired. Such data would be better preserved at surviving farmsteads of this age in the Ozark region. For this reason, the site is not considered eligible for listing in the NRHP.

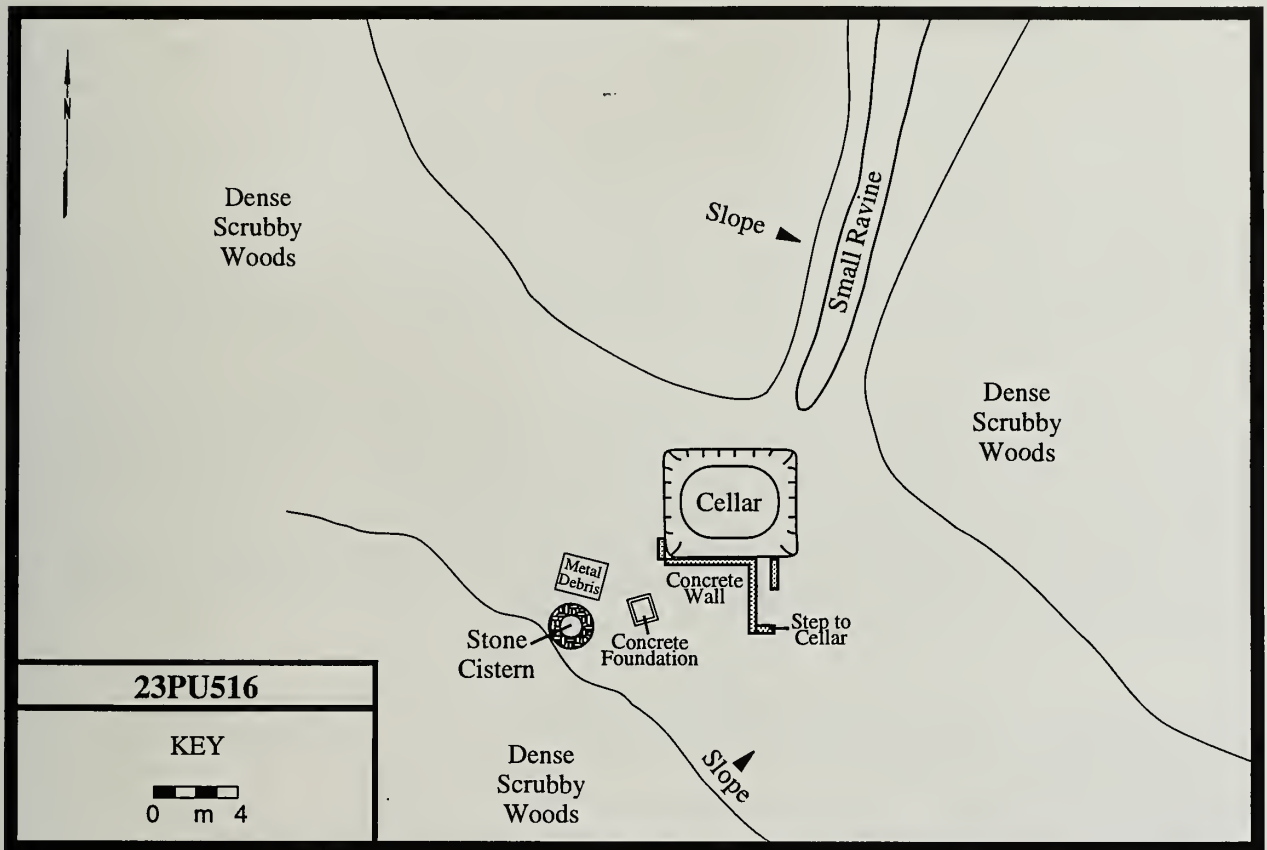


Figure 78. Sketch Map of 23PU516.

Site Number: 23PU661 (95-45: AOS 115)

USGS Quadrangle: Big Piney 7.5'

Elevation: 290 m asl

Site Type: Lithic Debris Scatter

Soil Type: Doniphan very cherty silt loam, 3-9 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Potentially Eligible

This site is located in the uplands along the crest and sides of a northeast-trending ridge in a bend of the Big Piney River (Figure B3). Bluff edges overlooking the Big Piney River are located 200 m to the south and 400 m to the north. The site is bordered to the west by a bedrock exposure that forms the highest point on this upland ridge. The eastern side of the site is bordered by the head of a drainage that descends to the northeast into the Big Piney River valley. The entire site area is covered with oak woods and some juniper trees. Surface visibility was limited to the bedrock exposure along the western site edge.

Twenty posthole tests, 11 of which were positive, were excavated within the limits of this site. Based on the positive posthole tests, the roughly circular site extends 100 m north-south by 100 m east-west (Figure 79). All artifacts were recovered in the upper 30 cm of the positive tests and were found in both the A and the E soil horizons. Soil profiles were not uniform and indicated greater surface erosion along the western side of the site. Site stratigraphy consisted of an Ap horizon (plow zone) that is absent to 15 cm thick and an E horizon that is up to 20 cm thick. Soil profiles are more intact in those postholes located away from the side slope of the ridge. A total of 29 artifacts was recovered. The artifacts consist of 13 broken flakes, five tertiary flakes, one bipolar and one bifacial thinning flake, and nine pieces of block shatter. Of this total, 14 were found in the Ap horizon, seven in the E horizon, with the remainder from either the Ap or E horizons or from unknown contexts (Table 14).

The recovery of cultural material over a wide area and with the presence of a relatively intact E horizon indicates a high potential for in situ remains. Based on the level of preservation present at this site, and its close proximity to Miller Cave, this site is recommended as potentially eligible for the NRHP. Phase II investigations are recommended. The Phase II investigation should focus on mapping site boundaries, determining if intact features are present by means of test unit excavations, on recovering diagnostic artifacts and environmental data and on a possible relationship to the Miller Cave neighborhood.

Site Number: 23PU662 (95-45: AOS 116)

USGS Quadrangle: Big Piney 7.5'

Elevation: 308 m asl

Site Type: Lithic Debris Scatter

Soil Type: Clarksville-Gepp very cherty silt loams, 14-35 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This site is located in the uplands on the southeast slope of a north-trending ridge situated in a bend of the Big Piney River (Figure B3). Bluff edges overlooking the Big Piney are located 350 m to the south and 600 m to the north. To its south is previously recorded site 23PU288. The western site limit is the ridge crest, while the eastern limit is the head of a drainage that descends to the northeast into the Big Piney River valley. The entire site area is covered with oak forest, with no surface visibility.

Eleven posthole tests were excavated within the limits of this site, five of which were positive. Based on the extent of the positive tests and the physical limits discussed above, the site area is defined as extending 60 m north-south by 50 m east-west (Figure 80). Site stratigraphy consists of a shallow Ap horizon (plow zone) that is 5-10 cm thick, followed by a 10-15-cm thick E horizon. Lithic debitage was recovered in the upper 30 cm of five posthole tests. Soil profiles indicate this site location has undergone surface erosion, particularly along its western side. Materials were found in both the Ap and the E soil horizons. Artifacts recovered from this site include one secondary flake, two tertiary flakes and nine broken flakes. One artifact was found in the Ap horizon, four in the E horizon and the remainder from either the A or E horizons. This area has been impacted by agricultural plowing and resultant erosion. These processes have in turn destroyed much of the intact archaeological deposits at this site. The remaining intact E horizon deposits appear to contain a light concentration of flakes.

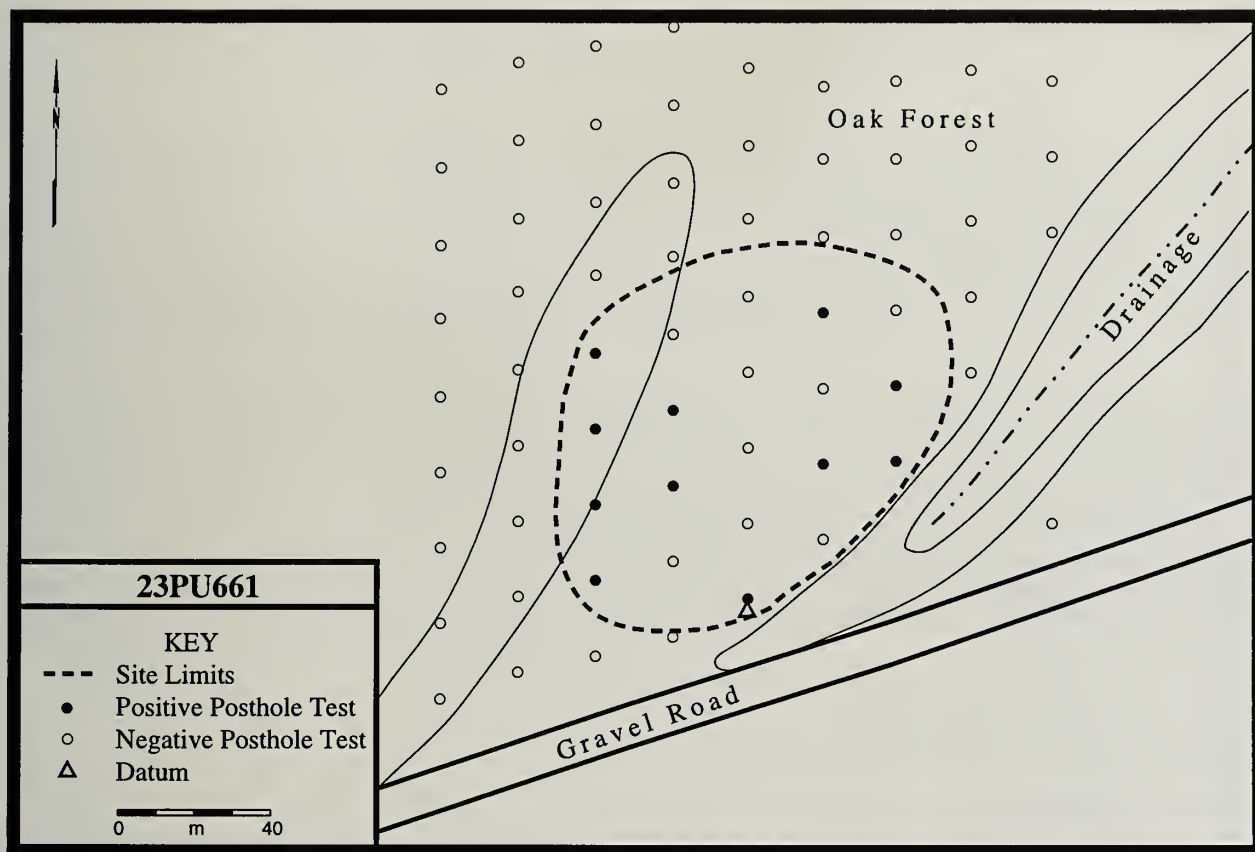


Figure 79. Sketch Map of 23PU661.

Table 14. Distribution of Artifacts Collected from 23PU661.

<i>Soil Horizon</i>	<i>Thickness of Horizon</i>	<i>Number of Artifacts</i>
A	0-15 cm	14
E	10-20 cm	7
A/E	—	6
Uncertain	—	2

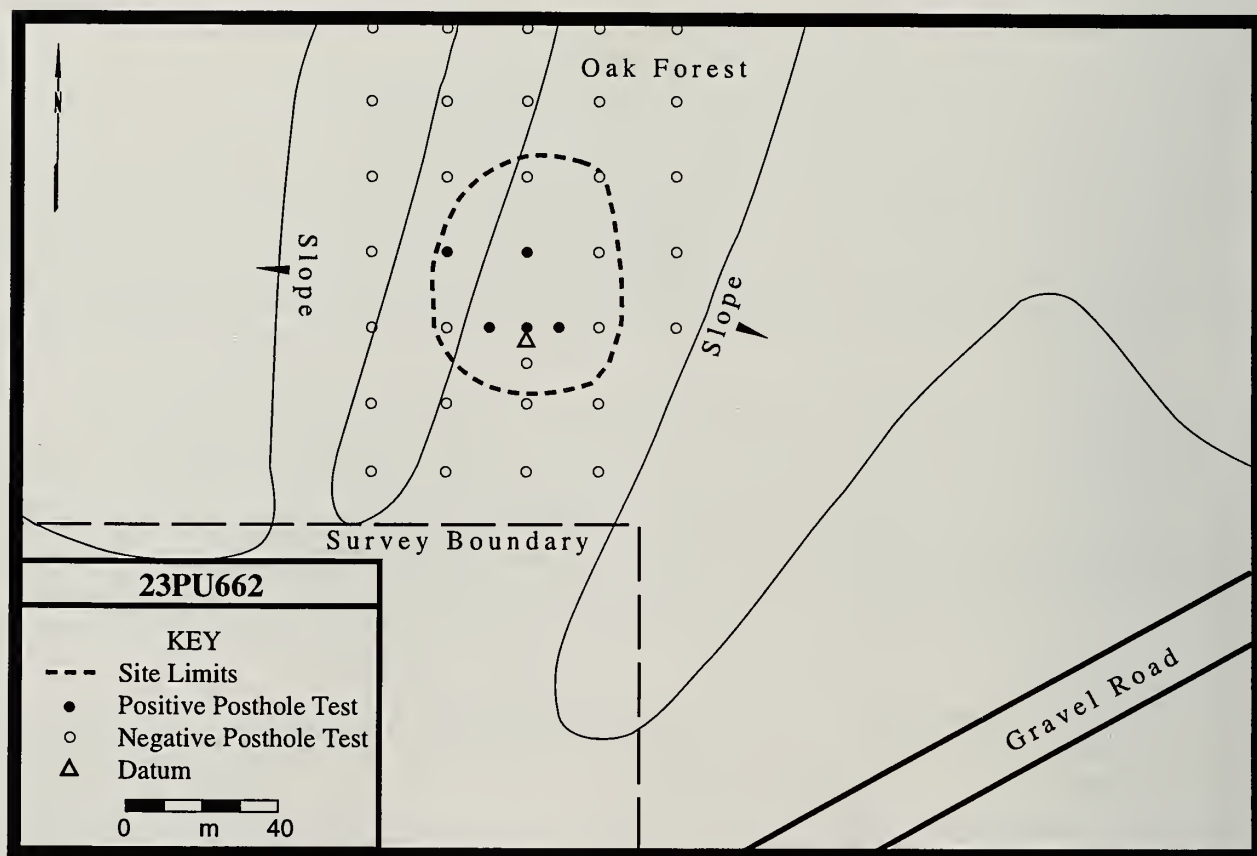


Figure 80. Sketch Map of 23PU662.

Based on the degree of agricultural disturbance and erosion that has impacted the integrity of deposits at the site and the limited number and range of artifacts collected from those intact deposits, it is likely that additional investigations would recover only redundant data. Therefore, this site is recommended to be not eligible for listing in the NRHP. No additional investigations are warranted.

Site Number: 23PU663 (95-45: AOS 119)

USGS Quadrangle: Big Piney 7.5'

Elevation: 259 m asl

Site Type: Farmstead/Residence

Soil Type: Clarksville-Gepp very cherty silt loams, 14-35 percent slopes

Component(s): 19th-20th century

Recommendation: Potentially Eligible

This site is located on a small alluvial fan near the mouth of a large unnamed intermittent drainage of the Big Piney River (Figure B3). The site is immediately east of a small intermittent drainage and 30 m south of the main drainage. To the north and east of this site the landscape has been extensively

modified by gravel quarrying. The site is wooded with no surface visibility. An historic site was located in this general vicinity on 1930s and 1940s aerial photographs.

The site is defined on a relatively flat terrace as extending 40 m north-south by 40 m east-west (Figure 81). Within this site area there is a rectangular stone foundation that measures roughly 4-x-6 m. To the south and east of this foundation are some widely spaced foundation stones that may be part of the same structure. One piece of clear glass was found while documenting the foundation and a small piece of undecorated whiteware was located in a posthole test north of the foundation in the upper 10 cm of soil. There has been a small amount of disturbance at this site area in the form of military foxholes, but the overall integrity is good.

The site is recommended as potentially eligible for the NRHP based on the presence of intact features and the possible nineteenth century date. Additional archive and field research is recommended to evaluate its NRHP eligibility. Part of this research should focus on identifying the likely location of features such as privies and cellars. Based on the outcome of that research, additional fieldwork, including close interval posthole tests, should be conducted to detect potential features. These tests can identify the level of disturbance, subsurface features, site limits, and the occupation of the site through the recovery of artifacts. Finally, formal test units should be excavated to verify the results of the posthole tests regarding feature location.

Site Number: 95-45: AOS 117

USGS Quadrangle: Big Piney 7.5'

Elevation: 302 m asl

Site Type: Isolated Find

Soil Type: Clarksville very cherty silt loams, 14-35 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This isolated find was found in the uplands 40 m east of a base road that leads into the Cantonment (Figure B4). It is located near the head of an intermittent drainage that flows eastward 4.5 km to join the Big Piney River. Immediately to the north and west of this location the landscape has been modified by heavy machinery to create additional surface drainage away from the road. The vegetation surrounding this isolated find is an oak forest, with no ground surface visibility. A single, nondiagnostic tertiary flake was found within 15 cm of the ground surface in one posthole test (Figure 82). Three supplementary posthole tests were excavated and the drainage cut was examined, but additional materials were not located. The isolated artifact was recovered from the E soil horizon. This isolated find is recommended as ineligible for the NRHP given that only one artifact was recovered from a highly disturbed area. No additional investigations are recommended.

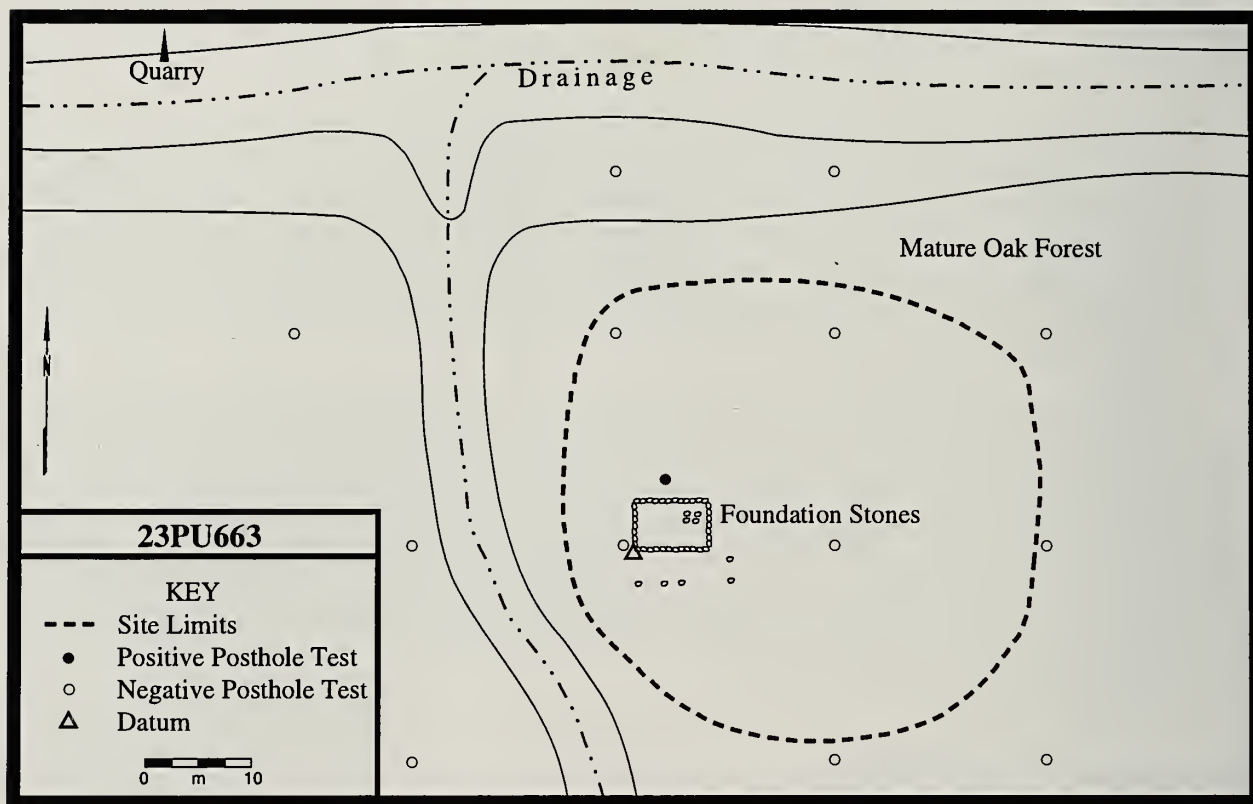


Figure 81. Sketch Map of 23PU663.

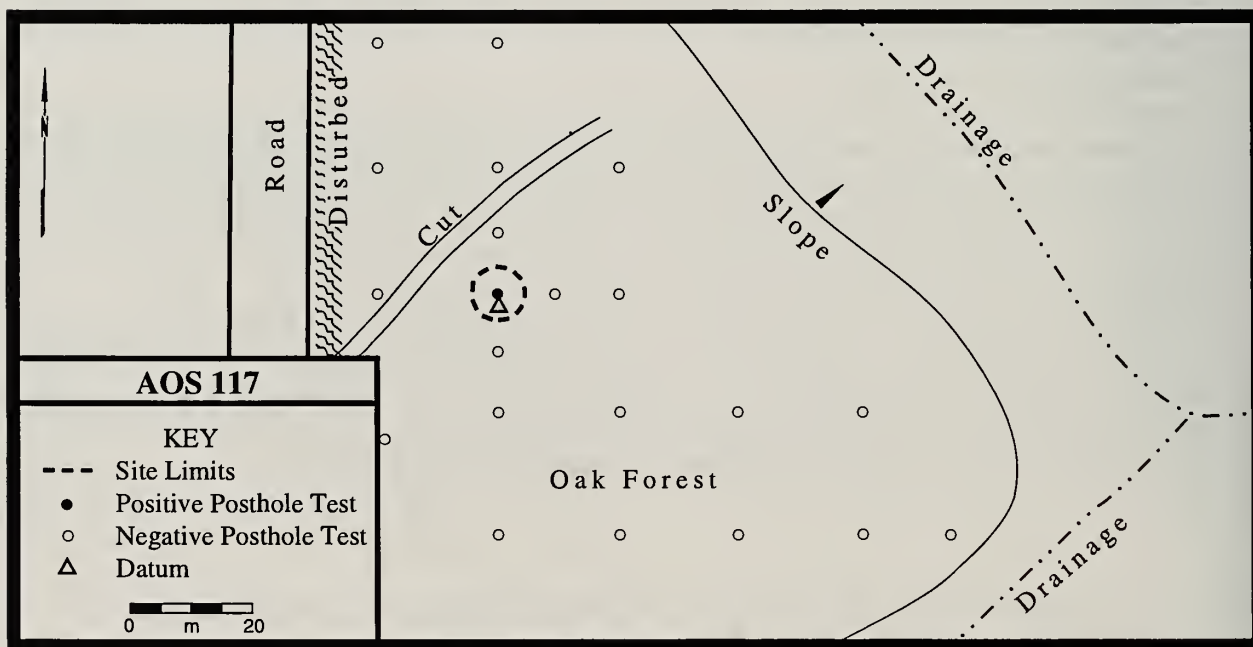


Figure 82. Sketch Map of 95-45: AOS 117.

Site Number: 95-45: AOS 118

USGS Quadrangle: Big Piney 7.5'

Elevation: 319 m asl

Site Type: Isolated Find

Soil Type: Lebanon silt loam, 2-5 percent slopes

Component(s): Unknown Prehistoric

Recommendation: Not Eligible

This isolated find was found in the uplands 10 m west of a gravel road and 60 m west of a steep slope that leads into an intermittent drainage of the Big Piney River (Figure B4). The immediate area has been altered significantly by road maintenance and military training activity. The vegetation surrounding this isolated find is an oak forest, with a rose thicket understory and 20 percent ground surface visibility. Two nondiagnostic artifacts, a primary flake and a secondary flake, were recovered from a single posthole test between 10 and 20 cm below surface in the BE soil horizon (Figure 83). Surrounding posthole tests were excavated at 10-m and 20-m intervals without locating any additional materials. One half-pint, clear milk bottle was collected from the surface, but no other historic material was recovered. This isolated find is recommended as ineligible for the NRHP given that only two prehistoric artifacts were recovered from a highly disturbed area. No additional investigations are recommended.

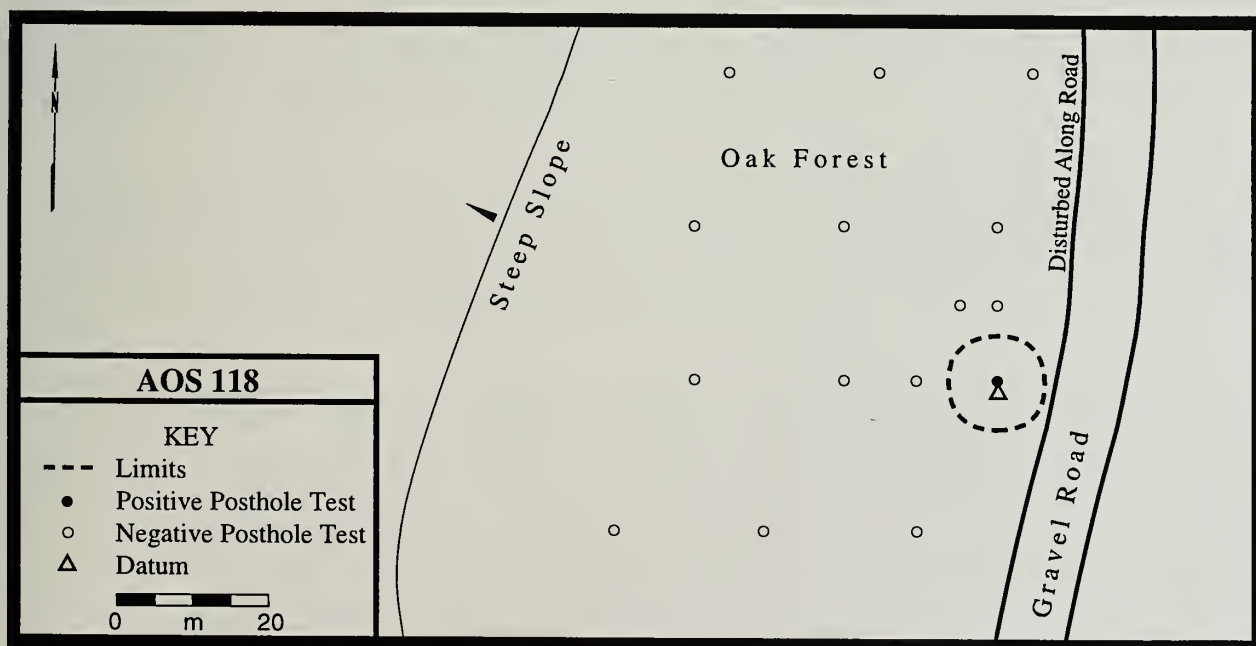


Figure 83. Sketch Map of 95-45: AOS 118.

CHAPTER 7.

DISCUSSION OF RESULTS

Phase I archaeological investigations conducted at Fort Leonard Wood Military Reservation were designed to comply with federal cultural resource regulations and to acquire data to enable basic research on the prehistory and history of the area. These two goals, while combined during the fieldwork stage of the project, have particular differences in the uses of collected data. The compliance objective was met, and the relevant data are presented in Chapter 6 and Appendix C. A compliance summary is provided in Chapter 8. This chapter examines the same data from a research perspective. Initially it must be recognized that the locations examined were based on Fort Leonard Wood compliance needs, and are therefore not necessarily locations representative of specific cultural resource zones. Recognizing the limitations of the data, however, it is still possible to address a number of topics with the data collected from this and previous projects. First, an overview of the results of the current survey is presented. Then, three topics are discussed in greater detail: settlement patterns, cultural chronology, and predictive model assessment. The discussion presented here draws from all 49 newly identified sites and isolated finds discussed in the previous chapter.

Overview of Results

The Quarry Tract, located in four parcels to the west of the Big Piney River, is categorized as part of the Big Piney cultural resource zone. Within this tract, totaling 882 acres, ten newly identified and previously recorded sites were located, or 1.1 sites per 100 acres. This rate of site identification is lower than that for the previously surveyed Big Piney Timber and Ramsey Cemetery tracts (McGowan 1996:85), in which an average of 3 to 4 sites per 100 acres was obtained, but similar to that for the initial Big Piney survey tract (Ahler and McDowell 1993), which averaged 0.9 sites per 100 acres. A similarity between the Quarry and initial survey areas is that both contain relatively large upland tracts located between the Cantonment and Big Piney River valley.

Of the five newly identified sites and isolates in the Quarry tract, two are prehistoric open-air sites, two are prehistoric isolated finds, and one is an historic site. Average site size is 6,500 m². Sites average 350 m from the Big Piney River while the isolated finds average 125 m from unnamed intermittent drainages. The average number of artifacts from sites is 20.5, with four artifact classes present. All of the sites and isolates are located on upland ridges.

The McCann Cemetery Tract, situated north and east of Roubidoux Creek, totaled 650 acres. This tract is categorized as part of the Upper Roubidoux cultural resource zone. Another important characteristic of this tract is the presence of Hurd Hollow trending northwest to southeast through the eastern portion of this survey area. Investigations located 34 newly identified and previously recorded sites and isolated finds, or 5.2 sites per 100 acres. This average is much higher than that of previous surveys within the Upper Roubidoux cultural resource zone, all of which recorded between 1.0 and 1.5 sites per 100 acres (McGowan 1996:85). It appears that the presence of both Roubidoux Creek and Hurd Hollow within this survey tract accounts for the increased site density.

Of the 25 newly identified sites and isolates within the McCann Cemetery Tract, 19 prehistoric open-air sites, two rockshelters, two prehistoric/historic sites, one historic site, and one isolate were

found. Site size averages 2,061 m², with an average distance of 230 m to the nearest water source. Reflecting the number of water sources present, the closest water sources are almost evenly divided between Roubidoux Creek, Hurd Hollow and unnamed intermittent streams for sites located in this tract. Sites are mainly situated on upland ridges, although others are present on slopes and ridge crests overlooking Roubidoux Creek. The average number of artifacts found at sites is 17.5, with 3.5 different classes of artifacts present.

The final tract, the Joint Use Tract, is located in the northwest portion of Fort Leonard Wood and is categorized as part of the Lower Roubidoux cultural resource zone. This tract, totaling 1,968 acres, includes both uplands and segments of the Roubidoux Creek floodplain. Thirty-two newly identified and previously recorded sites are located in this tract, yielding an average of 1.6 sites per 100 acres. This average is greater than that for two previously surveyed tracts in the Lower Roubidoux cultural resource zone (McGowan 1996:85), probably due in part to the greater amount of floodplain acreage included in the current survey tract.

A total of 19 newly identified sites and isolates was recorded in the Joint Use tract, including nine prehistoric open-air sites, two historic sites, one cairn, and seven isolated finds. The sites average 1,016 m² in size and are located at an average distance of 157 m from water. The closest water source is almost invariably Roubidoux Creek. Sites tend to be located more on terraces, although others on upland ridges and ridge spurs also were found. Sites average 18.4 artifacts and 3.4 artifact classes.

In sum, the sites located within the Quarry, McCann Cemetery and Joint Use tracts reinforce a number of patterns previously noted at Fort Leonard Wood while varying in details, most probably due to the specific physiographic characteristics of the survey tracts. Sites are located near water sources, averaging less than 350 m in all tracts, and 230 m or less in the two Roubidoux Creek tracts. For most sites, closest water is typically a major stream such as the Big Piney River or Roubidoux Creek, or a secondary stream such as Hurd Hollow. For isolates, there is a more even distribution between major, secondary and intermittent streams. This no doubt reflects the more expedient use of isolated find locations, including the potential that the use of these locations does not depend on access to water. In contrast, the sites, often identified as base and seasonal or resource specific field camps, would have required access to water due to longer spans of occupation by larger groups. Sites also are clustered on upland ridges, ridge crests and ridge spurs. Evidently, this locational preference appears to be due in part to ease of access to a number of different zones, including floodplain, slope and uplands, as well as minimizing the threat of natural disasters such as flooding. An expanded comparative discussion, touching on these and other issues, can be found in the following section on settlement patterns.

Settlement Patterns

The lack of prehistoric diagnostics recovered during this survey limits the level of analysis to settlement/site locational patterns. In Chapter 4, relevant research issues in settlement patterns were discussed. The research design and previous investigations have tended to concentrate on the analysis of a number of measurable site attributes, including distance to water, site size, artifact density, and artifact diversity, all of which are used to propose an inferred site function or site type. The location of these site types are then analyzed across the cultural resource zones identified at Fort Leonard Wood.

The basic tenet behind this line of analysis, typically conceived as an operationalization of Binford's (1980) hunter-gatherer site types, is that larger sites, with dense artifact concentrations and located close to water are base camps, while smaller sites, with fewer artifacts and often located away from water, are field camps (Ahler and McDowell 1993; Moffat et al. 1989; Niquette 1984, 1985; Niquette et al. 1983). Research also has indicated that survey tracts close to water tend to have dense concentrations of sites containing multiple site types (McGowan 1996:86). These concentrations have been termed neighborhoods (Ahler and McDowell 1993). In contrast, site density and the number of different site types present decreases away from water, especially in the Interior Uplands, most probably due to more infrequent, although perhaps specialized, use of upland resources (Ahler and McDowell 1993; McGowan 1996). It also has been noted that these trends may have changed through time (Ahler and McDowell 1993).

The analysis presented here examines these proposed relationships discussed above using data collected from the newly identified sites and isolated finds located within the three survey tracts investigated during the current project. Data from previously reported sites is not included, given potential differences in site recordation, artifact recovery and artifact analysis between investigators. For the newly identified sites and isolates, data on site size, landform location, proximity to water, artifact density (e.g., number of artifacts recovered) and artifact diversity, were collected. The data were then compared across the three resource zones investigated.

The relationship between site size and distance to water is generally perceived as a strong indicator of site location at Fort Leonard Wood, with large sites located close to water sources and smaller sites dispersed throughout the landscape (Ahler 1995; Ahler and McDowell 1993; McGowan et al. 1996; McGowan 1996; Moffat et al. 1989; Niquette 1984; Niquette et al. 1983). For the newly gathered data, this relationship is confirmed for the Joint Use and McCann Cemetery tracts, but not for the Quarry Tract (Figures 84, 85 and 86). There is a great amount of variability in site size within the Joint Use and McCann Cemetery tracts in areas close to a major stream, while site size variability decreases away from major streams. In the Joint Use tract, the initial 100 m from Roubidoux Creek contains sites between 1 and 2,500 m² in size, while from 300 to 400 m from the creek site size varies only between 1 and 1,000 m². The contrast is even greater within the McCann Cemetery tract. There, sites range in size from 1 to 16,000 m² in the initial 200 m from the creek, while only isolates are found from 600–800 m from the creek. Clearly, these data indicate that larger sites are located only close to permanent water sources, while smaller sites are ubiquitous across the landscape. There also appears to be a general decrease in site size away from major streams. The Quarry data support this interpretation. There, sites are 350 m from the Big Piney River, while the isolates are located inland from the river, although only 125 m from unnamed intermittent streams.

When site size is plotted against landform, it can be seen that not only are large sites located proximate to water as discussed above, but that large sites tend to be located on elevated landforms (Figure 87). Average site size is greatest within each survey tract on upland ridges or ridge crests or spurs, and is lower for those sites located on terraces and slopes. Within the current survey tracts elevation outside of the major stream floodplains was also a requirement for occupation of larger sites.

Similar relationships are apparent between artifact density, artifact diversity and distance to water (Figures 84, 85, and 86). In general, both artifact density and artifact diversity are greatest at sites

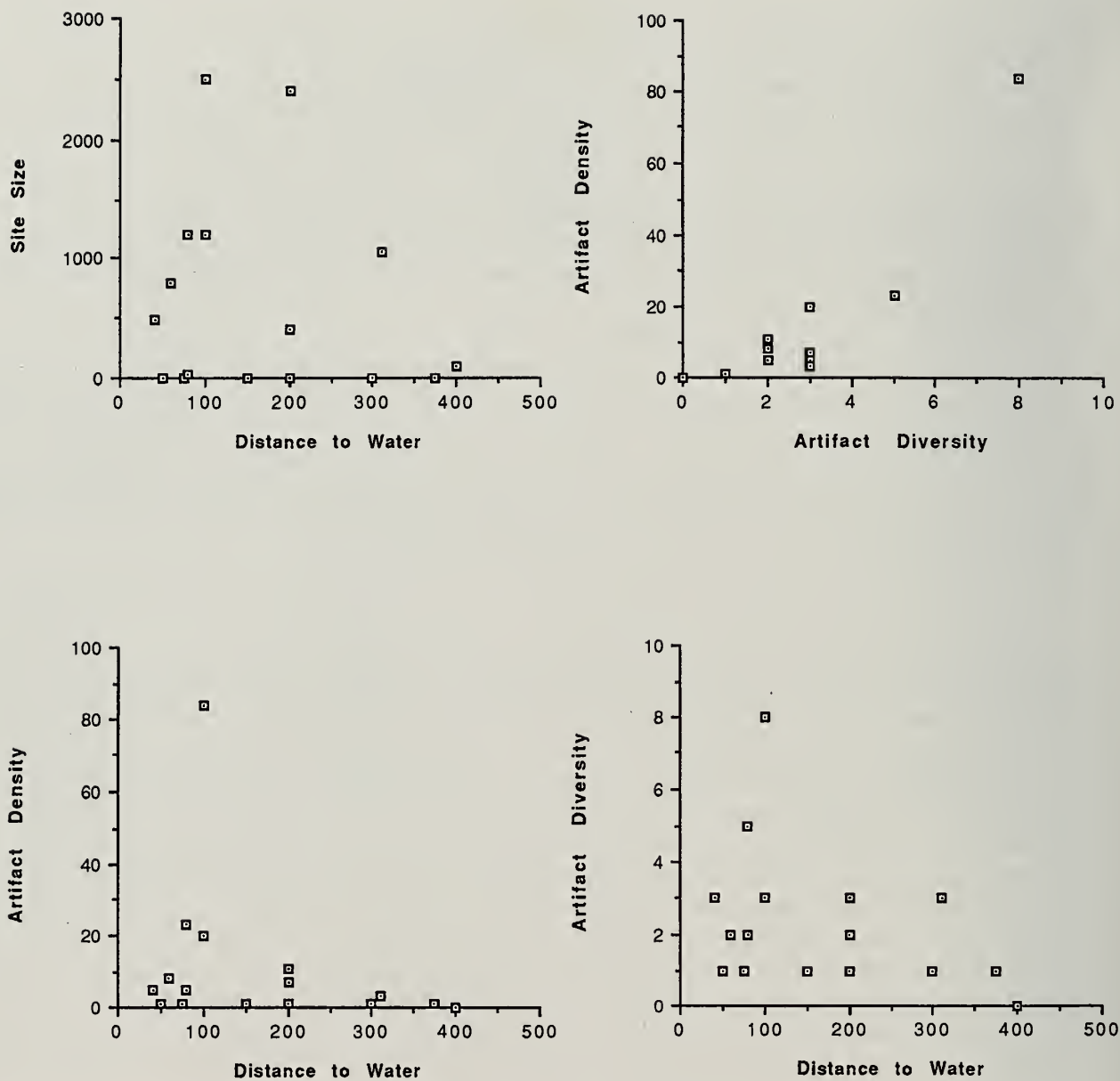


Figure 84. Scatter Plot of the Relationship Between Distance to Water, Site Size, Artifact Density, and Artifact Diversity for Newly Identified Sites in the Joint Use Tract.

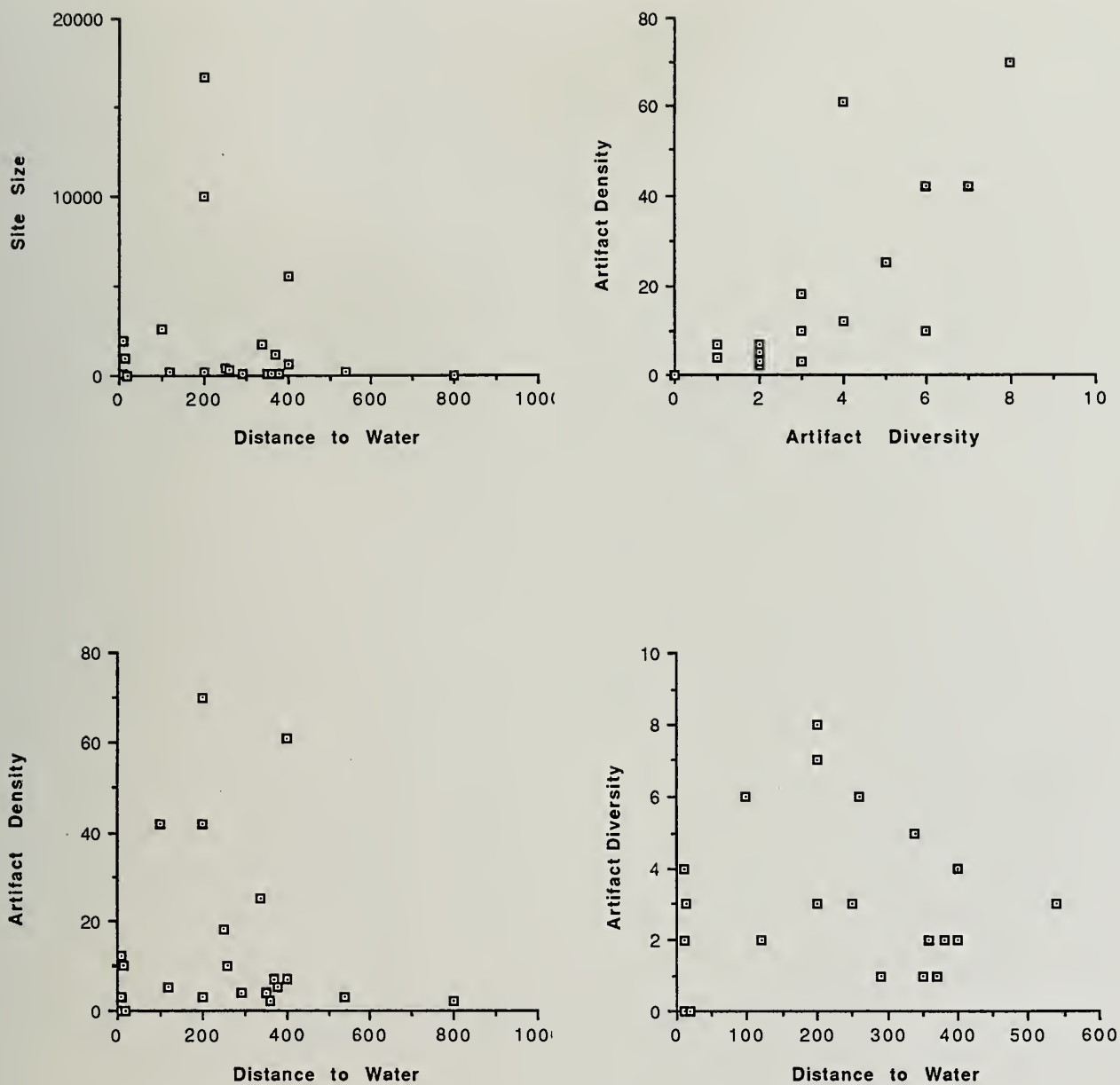


Figure 85. Scatter Plot of the Relationship Between Distance to Water, Site Size, Artifact Density, and Artifact Diversity for Newly Identified Sites in the McCann Cemetery Tract.

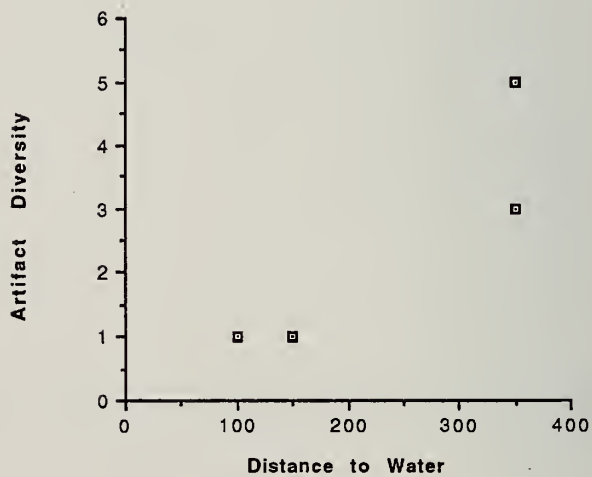
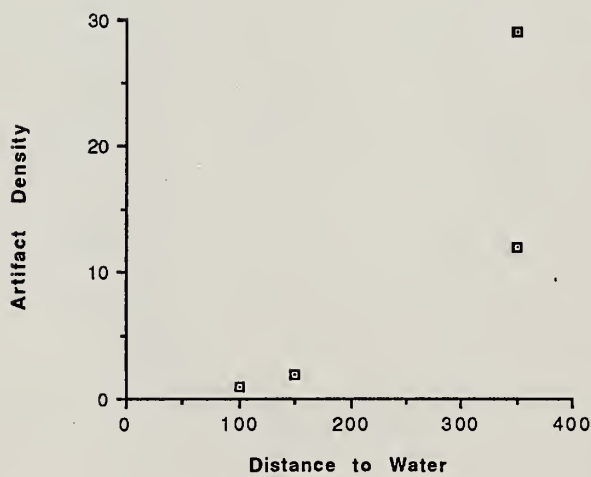
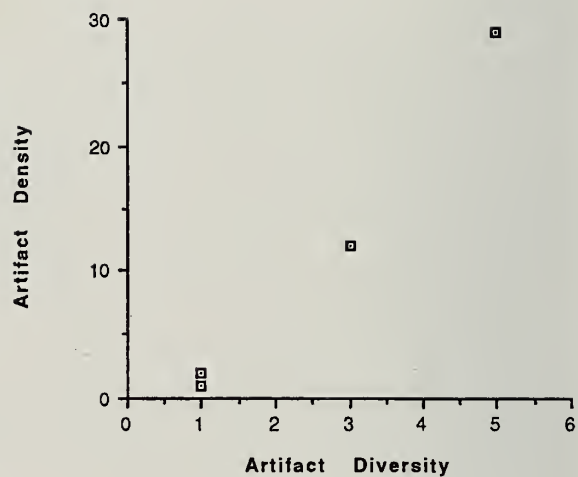
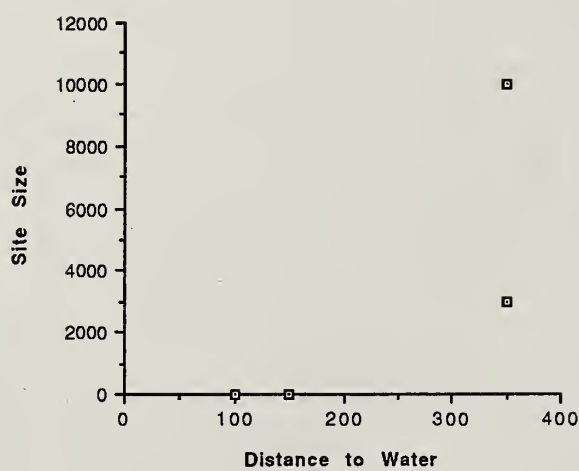


Figure 86. Scatter Plot of the Relationship Between Distance to Water, Site Size, Artifact Density, and Artifact Diversity for Newly Identified Sites in the Quarry Timber Sale Tract.

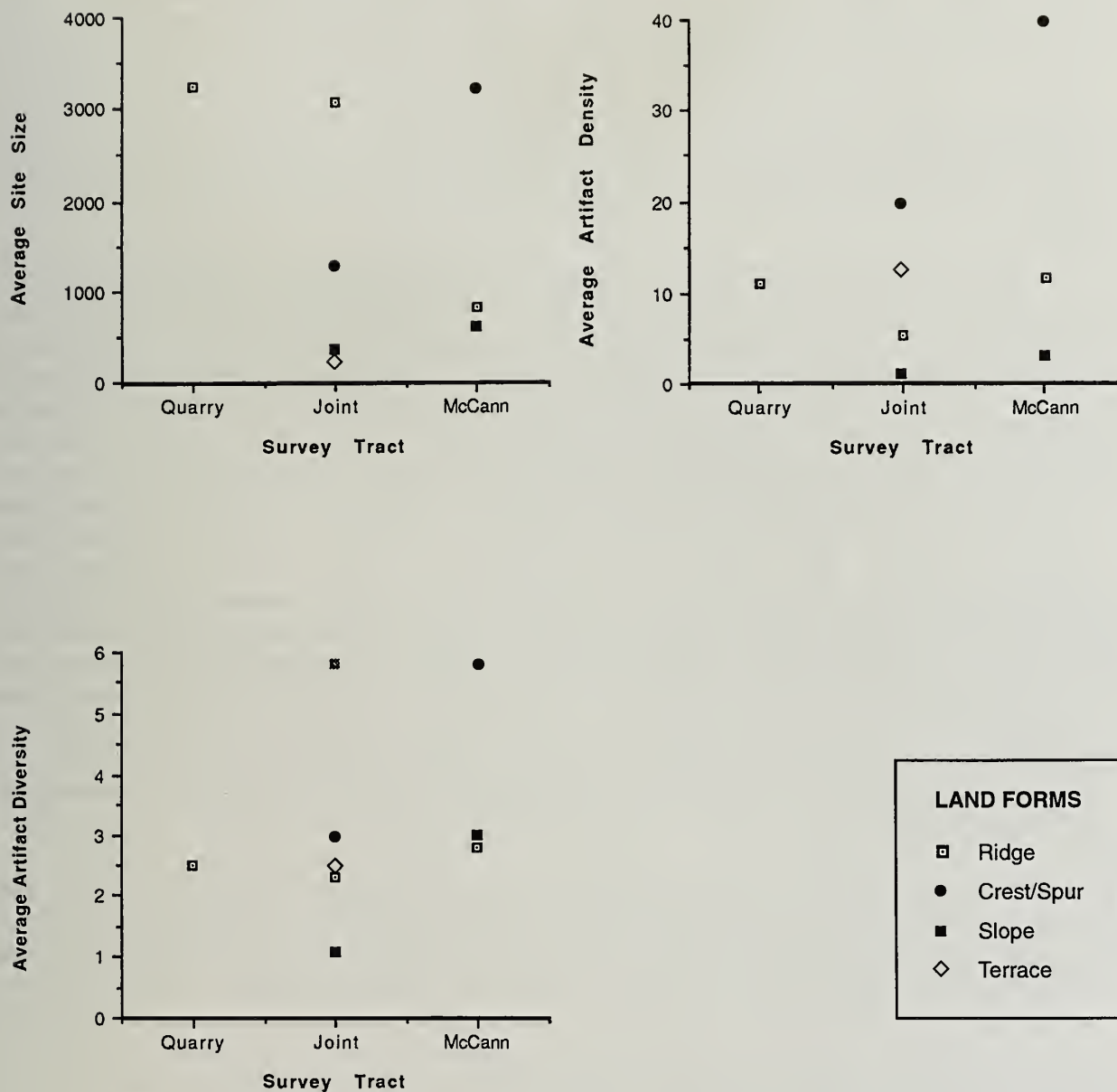


Figure 87. Relationship Between Average Site Size, Average Artifact Density, Average Artifact Diversity, and Landform Type for Newly Identified Sites Within the Quarry, Joint Use and McCann Cemetery Tracts.

nearer the major streams, while both measures decrease with distance from major streams. Much like the relationship between site size and distance to water, variability in artifact density and artifact diversity is greatest nearer major streams and decreases away from those streams. This general trend appears to be less strong within the McCann Cemetery Tract, most likely due to the presence of two streams, Roubidoux Creek and Hurd Hollow, in close proximity. An analysis of these two variables by landform also confirms the trends discussed above (Figure 87). For both artifact density and artifact diversity, the highest averages are found on sites located on either upland ridges or ridge spurs and crests.

These trends may be related to two separate, but interrelated, causes. First, it is not uncommon that larger sites should contain both greater number of artifacts and artifact types. This is generally attributed to longer periods of occupation, larger populations, and a diverse array of activities conducted at these locations. Second, the data discussed above also suggest that smaller sites located near major streams also can have, but do not necessarily always have, increased amounts of artifacts and artifact types as compared with sites located away from major streams. Based on size alone, these sites would not be classified as base camps but instead as field camps. It would appear, then, that a portion of the field camps near major streams were situated to exploit more dependable resources than those located away from streams. Major stream valleys would tend to contain a more diverse array and greater quantity of resources. Field camps near major streams, then, would be occupied more often, and may have been used to access a greater variety of resources. Both conditions could account for field camps near major streams that have unusually dense concentrations of material and diverse artifact assemblages. Classic examples of such sites at Fort Leonard Wood are rockshelters and caves, which have generally been interpreted as seasonal field camps (Ahler, Kreisa, McDowell, and McGowan 1995; Kreisa 1995; Kreisa et al. 1996; see also Brown 1984). While a relatively large amount of data is available on the function of rockshelters and caves, the data above suggest that open-air sites served similar functions in the Fort Leonard Wood area, perhaps being differentially occupied based on seasonality and resources.

The above discussion points to a general dichotomy in settlement and site function at Fort Leonard Wood, best characterized as valley oriented and uplands oriented. Stream valley-oriented sites occur in dense clusters, termed neighborhoods, that include a wide variety of site types differentiated by size, artifact density, artifact diversity, and location on the landscape, among others. The sites are located within the valley proper, along, and sometimes within, upland slopes, and on the upland ridge, ridge crest, or ridge spur. Uplands-oriented sites are more dispersed, are located further away from major streams, and have decreased densities of artifacts and fewer artifact types than many, but not all, of the valley-oriented sites.

Examples of the neighborhood structure of settlement are present in both the McCann Cemetery and Joint Use tracts. Within these tracts at least six site types can be defined. Largest are the base camps, examples of which may be 1 ha or more in size. Included in this category are sites 23PU162, 23PU225 and 23PU314 in the Joint Use Tract and 23PU651, 23PU652 and 23PU667 in the McCann Cemetery Tract. The smaller of these sites, those about 1 ha in size, may represent field camps that were repeatedly occupied. These sites often have dense scatters of material and high artifact diversities. Base camps are located on upland ridges or ridge crests in the McCann Cemetery tract but are on terraces as well as upland ridges in the Joint Use tract. Brown (1984) indicates that late prehistoric

base camps in the northern Ozarks may be 1 to 4 ha in extent and located in areas with prime agricultural potential, such as floodplain terraces. One candidate for this type of site is 23PU314 in the Joint Use tract, based on the recovery of a Mississippian triangular point at that site in the early 1980s.

Smaller open-air prehistoric sites are designated as field camps. A portion of these sites are larger, between 400 m² and 2,000 m² in size. These sites have fewer artifacts and less artifact diversity than do the proposed base camp sites. Sites are located on upland ridges, side slopes and terraces. Another class of field camps are smaller, generally less than 400 m², with low artifact densities and diversities. These sites are located in the same landforms as the larger field camps. This dichotomy may be related to length of occupation or a differential in the intensity of exploitation of resources between the two types. Another category of field camps is the caves and rockshelters. Examples are present in two of the survey tracts and often contain dense concentrations of material with diverse assemblages. The cave/rockshelter sites often have both Archaic period and Middle to Late Woodland period occupations. These sites are often interpreted as seasonal encampments or field camps, occupied during late fall, winter, and perhaps early spring. If the shelters are fall-winter field camps, then the open-air field camps may represent their analog, spring-summer-early fall resource-extraction locales. Isolated finds, another site type similar to field camps, may represent single episodes of occupation by one or few individuals.

The final site type present in two of the survey tracts is the cairn. Cairns are constructed limestone mounds, most often located on prominent ridge spurs overlooking a major stream. The sites, dating mainly to the Middle Woodland (or rarely the Late Woodland) period, are mortuary facilities. Archaic period and Middle Woodland to Late Woodland period burials have been found in caves as well.

Traditionally, starting with the research at Fort Leonard Wood conducted by Niquette (1984; 1985; Niquette et al. 1983) and continued by researchers in the later 1980s and early 1990s (Ahler and McDowell 1993; Baumann and Markman 1993; Moffat et al. 1989), prehistoric settlement structure at Fort Leonard Wood has been interpreted in light of Binford's (1980) model of the "collector" hunter-gather strategy. In this model, group base camps are established from which smaller groups periodically depart to obtain needed resources. As resource distribution is well-known, placement of base camps and the periodically occupied field camps is designed to minimize transport costs. Many aspects of the Fort Leonard Wood settlement pattern, especially the neighborhood clustering of sites, appear to conform to this model.

Alternatively, settlement may have been characterized by seasonal fragmentation of populations. In such a scenario, prehistoric groups coalesce at base camps during warm weather months, sending smaller parties to field camps on occasion to collect needed raw materials, much like the process described in the Binford (1980) "collector" hunter-gatherer strategy. These macrobands disperse, perhaps into family groups, during the winter. This slightly different model would account for the often dense middens with high artifact diversities found at the numerous caves and rockshelters of the region. Such a model has been proposed for a number of regions in northern Missouri-eastern Iowa-southwestern Wisconsin along the Mississippi River (Benn 1979; Stoltman 1990; Theler 1987). Similar to the Fort Leonard Wood region, these areas contain large base camps, smaller field camps, and rockshelters that were intensively occupied during cold-weather months. Additional Phase II-level data

from open-air base camps and field camps, along with caves and rockshelters can be used to evaluate this alternative settlement model.

Sixteen Historic period sites, consisting of fifteen residences/farmsteads and one school, are located in the three survey tracts investigated during the current project. Based on Smith (1993) the earliest local settlements are expected along the river bottoms, with upland settlement increasing after the Civil War. More recent settlements were focused along the upland road system that ran along ridge tops, and prominent landscape locations became the preferred home locations. Of the 15 homesteads located, twelve are on upland ridges and three are on terraces. All appear to date to the late nineteenth through the first half of the twentieth century, and many were no doubt abandoned after their purchase by the United States government during World War II. Both the dating of these sites and their physiographic location are consistent with the model proposed by Smith (1993). It is also posited that, due to construction of wells, historic sites should generally be located further from permanent sources of water than prehistoric sites in the region. For each of the three tracts prehistoric sites averaged between 125 m and 375 m closer to water sources.

Cultural Chronology

Development and refinement of a local Fort Leonard Wood chronology remains a significant research goal (e.g., Ahler, Kreisa, McDowell, and McGowan 1995; Ahler, Kreisa, Theler et al. 1995; Ahler and McDowell 1993; Kreisa et al. 1996; McGowan 1996). The overall development of a local chronology must be viewed as a long-term goal that will be achieved by adding to the local data base. To accomplish this, chronologically sensitive data, typically diagnostic artifacts, need to be recovered. While chronology building is better addressed through site testing and mitigation projects, Phase I survey results can document the presence of populations in the Fort Leonard Wood area during particular time periods. The current fieldwork has, to a limited extent, accomplished this task.

Temporally diagnostic prehistoric artifacts were recovered only at 23PU151, 23PU231, and 23PU635. Prehistoric ceramics were recovered at 23PU151 and 23PU635, while diagnostic projectile points were found at 23PU231. The relative paucity of diagnostic projectile points from sites investigated during the current Phase I investigations is similar to that in other recent surveys (e.g., McGowan 1996; McGowan et al. 1996) but is by no means representative of all survey projects conducted at Fort Leonard Wood (e.g., Ahler and McDowell 1993; Moffat et al. 1989; Niquette 1985; Niquette et al. 1983). Differences in projectile point recovery appear to be correlated with survey techniques, amount of ground surface visibility, location of the survey tracts, and site types located within the survey tracts.

The ceramics from both sites include plain and cordmarked varieties of the Late Woodland Maramec series. Analysis of cordage twists suggest their affiliation with the early Maramec Spring phase, and they should date between A.D. 600 and 1000. Phase II investigations at these sites should contribute to the investigation of cordage twists as an attribute capable of distinguishing between the early and late portions of the Maramec Spring phase. The presence of Late Woodland components in caves and rockshelters is characteristic of the late prehistoric settlement pattern in the Fort Leonard Wood region. Four temporally diagnostic projectile points were recovered from 23PU231, all of which

appear to date to the Late Archaic period. The points include a basal fragment of a possible Saratoga Cluster point, a complete Smith Basal Notched point, a basal fragment of a Late Archaic Stemmed Cluster point, and a midsection fragment of a potential Late Archaic Corner Notched Cluster point. The Smith Basal Notched point could date as early as the Middle Archaic period.

In addition, 16 historic sites, both newly identified and previously recorded, were located within the three survey tracts. Except for a single site, all appear to represent rural residences and farm complexes, which fall into either the renter or rural resident sites class. The single exception is identified as a school on plat and topographic maps. Similarly, historic records, artifacts noted in the field or collected, and observations on building material, suggest that all of these historic sites represent concentrations of late nineteenth to early twentieth century occupations. Three sites contain whiteware, perhaps indicative of a middle nineteenth century occupation. Instances of unequivocal evidence for pre-Civil War occupation are lacking in the survey tracts, as are sites indicative of the repopulation of the area following the end of hostilities in 1865. One potential explanation for the lack of early post-Civil War components may be continued use of the locales through the time of purchase by the United States government in the 1940s. The long occupation of those locales may have destroyed features associated with early occupations as well as masked early artifact assemblages with the dense concentration of twentieth century artifacts common at many of these sites.

Site Predictive Model Assessment

As discussed in Chapter 3, a number of models predicting site densities and locations have been proposed for Fort Leonard Wood (e.g., Ahler and McDowell 1993; McNerney 1992; Moffat et al. 1989). Typically, these models have identified access to permanent sources of water as a primary determinant of both site location and site density. In these models, site locations were predicted to be most common within either 0.5 km or 1.6 km of a permanent water source. Recently, Ahler (1995) has completed a comprehensive analysis of site location based on a number of variables. Using Geographical Information Systems (GIS) analyses of a suite of variables, Ahler (1995) has constructed preliminary models of site location for cairns, open-air sites, and enclosed sites (caves/rockshelters). Each model identifies particular variables that tend to correlate with human use (or non-use) of landforms. A visual model of site location probabilities, ranging from low to high potential, for each of the site types, was produced. GIS models such as this have widespread implications for both cultural resource management and settlement pattern research.

Models, as iterative constructs, are designed to be refined when additional data are available. A formal reevaluation of the site prediction models for Fort Leonard Wood is beyond the scope of this project, but can be conducted by personnel with access to the databases and GIS map layers from which the original models were created. In a more preliminary manner, the site location data for the newly surveyed tracts documented in this report can be used to evaluate the model of site location predictions constructed by Ahler (1995).

All three survey areas are a mosaic of high, medium and low probability areas for cairns, caves/rockshelters and open-air prehistoric sites. Each has a major waterway that traverses the survey tract; Roubidoux Creek within the Joint Use and McCann Cemetery tracts and the Big Piney River

adjacent to the Quarry tracts. The proximity to these waterways yields zones of high to medium probability for all three prehistoric site types. In upland and secondary and tertiary stream settings, each present in the three survey tracts, site potential drops to medium to low. Newly recorded site locations were compared to the site probability base maps generated by Ahler (1995).

The locations of newly recorded cairns and cave/rockshelters correspond most closely to the areas identified as having high potential for these two site types. Of the three sites, one cairn and two caves/rockshelters, all three are located in areas of high probability. The cairn, 23PU656, is located at the edge of an upland ridge spur overlooking the Roubidoux Creek valley. Rockshelters 23PU635 and 23PU636 are both located along the base of an upland ridge bluff that forms an eastern wall of Roubidoux Creek.

A much wider range of variability was found for prehistoric open-air sites, including both sites and isolated finds. Of 29 prehistoric sites, 16 are found in areas of high probability, 11 in medium probability zones and two in low probability zones. Collapsing medium and low probability sites into a single category, 55 percent of the 29 newly identified sites are found in high probability zones. When analyzed by survey tract, a wide range of variation can be seen to exist. Of 19 sites found in the McCann Cemetery tract, 13, or 68 percent, are found in high probability zones. One of two new sites in the Quarry tract is within a high probability zone, while only two of nine, or 22 percent, of the sites found in the Joint Use tract are within high probability zones. In contrast, four isolates were found in high probability zones and six in medium probability zones. Clearly, sites tend to be located in areas with high potential, while isolates are found in areas with lower potential.

Summary

The basic survey goals at Fort Leonard Wood are similar to those addressed in most compliance surveys. Survey data is collected to identify locations that were important to people in the past. The locations and the assemblages left behind at these locations provide insight as to why the location was important, what activities were carried out there, and when the activities were carried out. These basic themes fall into research areas of cultural chronology, settlement patterns and settlement systems.

This project has accomplished five goals. First, 3,500 acres were inventoried, with 76 newly identified and previously recorded sites located and investigated. Second, the site locational and artifact assemblage data from those sites have been used to characterize settlement patterns within the tracts investigated and to relate those patterns to a wider discussion of prehistoric and historic settlement in the Fort Leonard Wood area. Third, temporal data from the prehistoric and historic sites investigated were discussed in terms of the local chronology and culture history. Fourth, the newly identified site locations were compared with a GIS site locational model constructed for Fort Leonard Wood. The results suggest that the model is relatively robust for cairn and cave/rockshelter sites, while deviations from the expected occur in some areas for prehistoric open-air sites. Fifth, the data as a whole have been used to provide NRHP recommendations for individual sites. A more detailed discussion of this process follows in Chapter 8.

CHAPTER 8.

SITE EVALUATIONS AND RECOMMENDATIONS

The Phase I archaeological survey of 1,416 ha (3,500 acres) of Fort Leonard Wood resulted in documentation of 76 sites and isolated finds. This total includes 27 previously recorded sites and 49 newly identified sites and isolated finds. These sites and isolated finds are located in all three of the survey tracts and are situated in different areas of the base. This chapter provides the rationale for the NRHP evaluations of the sites located during this project, a summary of those evaluations and recommendations for future archaeological investigations at these sites.

Site Evaluation Criteria

The primary goal of this project was to locate sites and provide an evaluation of their eligibility for listing in the NRHP. The eligibility criteria for archaeological sites are described in 36CFR60. To be eligible, cultural resources must possess integrity of location, design, setting, materials, feeling, and association. Typically, archaeological sites are evaluated under Criterion D, which indicates that to be eligible, a site must have yielded, or may be likely to yield, information important to prehistory or history. Sites can be evaluated under this criterion at the local, regional or national level of significance. Eligible sites, because of their significance, are managed to protect their integrity and preserve their information content for the future.

The results of Phase I archaeological surveys most often produce one of two evaluations for particular sites: not eligible or potentially eligible for listing in the NRHP. Seldom is enough information obtained during a Phase I-level survey to yield an evaluation of eligibility for the NRHP, and such was the case during this project. These recommendations are then provided to state and federal historic-preservation officials for official determinations of eligibility (Butler 1987). A determination of not eligible indicates the site is not afforded protection under cultural-resource laws, and no further work need be done (Butler 1987). An evaluation of potentially eligible indicates that further work is needed, most often in the form of Phase II archaeological testing of the site, and that the site should be protected as though it is eligible. The aim of this additional work is to acquire information to make a determination of whether the site is eligible or ineligible for listing in the NRHP.

Key criteria for making NRHP site evaluations are integrity, function, intensity, and rarity. Each criterion focuses on the likelihood of a site to provide information about the past. The greater the information potential, the greater the need for preservation or data recovery. Each site documented by this investigation was evaluated against these criteria, with a special emphasis placed on site integrity.

These concepts were operationalized slightly differently depending on site type. For the prehistoric open-air lithic scatters and cave/rockshelter sites, integrity of deposits, thickness of intact deposits, number of artifacts recovered from intact deposits, and the number of different artifact classes recovered, were all taken into account. In general, sites with intact deposits that yielded fairly sizeable and diverse artifact assemblages were deemed potentially eligible. Sites without intact deposits, with thin intact deposits, or with intact deposits that contained assemblages with few artifacts or low artifact diversity were generally considered not eligible. Prehistoric cairn sites were evaluated differently. These sites, representing loci of prehistoric burial and burial activity, have been heavily looted at Fort

Leonard Wood. The extent of looting at most cairns indicates that this is an endangered site type. Therefore, all cairns are viewed as potentially eligible, and intact cairns, if any are present on base, should be considered eligible.

Aside from one site, only historic farmsteads and farm residences were identified during the present survey. The exception is Dundas School in the McCann Cemetery Tract. Phase I evaluation of historic sites differs greatly from prehistoric sites, in that other data besides integrity and artifact density and diversity are readily available to researchers. Among these are historic maps and the more specific temporal and functional parameters of artifacts. Taken together, these data provide a better understanding, at a Phase I-level of investigation, of site function and span of occupation. Regarding the historic farmsteads/residences, site eligibility was determined based on two different sources of data. First, site integrity was necessary. At Fort Leonard Wood, this meant that the site lacked evidence of massive earthmoving, and that remnants of structures, such as foundations, wells, cisterns, or structural depressions were present and appeared to be intact, based on surface observation. Subsurface data indicating potential midden or subsurface features also were considered. Second, the site had to date prior to the twentieth century, as based on historic maps or dating of artifact types. This general guideline was operationalized because standing, operational examples of farmsteads dating to early in the twentieth century are still extant in the immediate area surrounding Fort Leonard Wood. These extant examples offer a better opportunity to study a greater range of issues associated with northern Ozarks farmsteads, including the vernacular architecture, oral history, economy, and structural relationships of farms and farmsteads in the area.

NRHP Eligibility Recommendations

Using the above discussion as a guideline, 73 of the 76 locations examined during this project have been evaluated for NRHP eligibility (Tables 15, 16 and 17). Twenty-six of the sites are recommended as potentially NRHP eligible, including 13 from the McCann Cemetery Tract (Table 15), 10 from the Joint Use Tract (Table 16) and three from the Quarry Tract (Table 17). Overall, this yields a rate of 34 percent of the investigated sites being recommended as potentially eligible. Somewhat surprisingly, all three tracts have approximately the same rate of sites identified as potentially eligible. Thirty-one percent of the Joint Use Tract sites are recommended as potentially eligible, while 30 percent of the sites from the Quarry Tract and 38 percent from the McCann Cemetery Tract are recommended as potentially eligible.

Not all site types are recommended as potentially eligible at equal rates. Six of seven caves/rockshelters and four cairns are recommended as potentially eligible. Fourteen of 46 open-air prehistoric sites (30 percent) are recommended as potentially eligible, while only 2 of 13 (12.5 percent) historic sites components are recommended as potentially eligible. The low percentage of historic sites recommended as potentially eligible is due to the twentieth century occupation of most of these sites. As stated in the site descriptions, extant examples of such sites are present in the Ozarks that can provide better data for questions of local and regional historic interest. One of two sites with both prehistoric and historic components, 23PU672, is recommended as potentially eligible.

Table 15. Summary NRHP Recommendations for Sites and Isolated Finds in the McCann Cemetery Tract.

<i>Site Number</i>	<i>AOS Number</i>	<i>NRHP Evaluation</i>	<i>Recommendation</i>
23PU217	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU218	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU219	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU220	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU241	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU270	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU284	Previously Recorded	Not Eligible	No Further Work
23PU285	Previously Recorded	Not Eligible	No Further Work
23PU509	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU640	AOS 148	Not Eligible	No Further Work
23PU650	AOS 135	Not Eligible	No Further Work
23PU651	AOS 136	Not Eligible	No Further Work
23PU652	AOS 137	Potentially Eligible	Phase II Evaluation
23PU653	AOS 138	Not Eligible	No Further Work
23PU675	AOS 139	Not Eligible	No Further Work
23PU654	AOS 140	Not Eligible	No Further Work
23PU635	AOS 142	Potentially Eligible	Phase II Evaluation
23PU636	AOS 143	Potentially Eligible	Phase II Evaluation
23PU637	AOS 144	Not Eligible	No Further Work
23PU638	AOS 145	Not Eligible	No Further Work
23PU639	AOS 147	Not Eligible	No Further Work
23PU641	AOS 159	Not Eligible	No Further Work
23PU642	AOS 162	Potentially Eligible	Phase II Evaluation
23PU643	AOS 165	Not Eligible	No Further Work
23PU644	AOS 166	Not Eligible	No Further Work
23PU665	AOS 167	Not Eligible	No Further Work
23PU669	AOS 181	Not Eligible	No Further Work
23PU670	AOS 182	Not Eligible	No Further Work
23PU671	AOS 184	Not Eligible	No Further Work
23PU672	AOS 187	Potentially Eligible	Phase II Evaluation
23PU666	AOS 172	Not Eligible	No Further Work
23PU667	AOS 173	Potentially Eligible	Phase II Evaluation
23PU668	AOS 174	Not Eligible	No Further Work
Isolate	AOS 146	Not Eligible	No Further Work

Table 16. Summary NRHP Recommendations for Sites and Isolated Finds in the Joint Use Tract.

<i>Site Number</i>	<i>AOS Number</i>	<i>NRHP Evaluation</i>	<i>Recommendation</i>
23PU151	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU162	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU223	Previously Recorded	Not Eligible	FLW Determine Ownership
23PU224	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU225	Previously Recorded	Not Eligible	No Further Work
23PU231	Previously Recorded	Unevaluated	Investigate Entire Site
23PU233	Previously Recorded	Not Eligible	No Further Work
23PU234	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU278b	Previously Recorded	Not Eligible	No Further Work
23PU314	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU319	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU320	Previously Recorded	Not Eligible	No Further Work
23PU550	Previously Recorded	Not Eligible	No Further Work
23PU657	AOS 109	Potentially Eligible	Phase II Evaluation
23PU659	AOS 112	Not Eligible	No Further Work
23PU660	AOS 113	Potentially Eligible	Phase II Evaluation
23PU655	AOS 104	Not Eligible	No Further Work
23PU656	AOS 105	Potentially Eligible	Phase II Evaluation
23PU664	AOS 126	Not Eligible	No Further Work
23PU645	AOS 127	Not Eligible	No Further Work
23PU646	AOS 131	Not Eligible	No Further Work
23PU647	AOS 132	Not Eligible	No Further Work
23PU648	AOS 133	Potentially Eligible	Phase II Evaluation
23PU649	AOS 134	Not Eligible	No Further Work
23PU658	AOS 111	Not Eligible	No Further Work
Isolate	AOS 108	Not Eligible	No Further Work
Isolate	AOS 110	Not Eligible	No Further Work
Isolate	AOS 149	Not Eligible	No Further Work
Isolate	AOS 150	Not Eligible	No Further Work
Isolate	AOS 101	Not Eligible	No Further Work
Isolate	AOS 102	Not Eligible	No Further Work
Isolate	AOS 130	Not Eligible	No Further Work

Table 17. Summary NRHP Recommendations for Sites and Isolated Finds in the Quarry Timber Sale Tract.

<i>Site</i>	<i>AOS Number</i>	<i>NRHP Evaluation</i>	<i>Recommendation</i>
23PU288	Previously Recorded	Eligible	Monitor
23PU363	Previously Recorded	Potentially Eligible	Phase II Evaluation
23PU368	Previously Recorded	Eligible	Monitor
23PU515	Previously Recorded	Not Eligible	No Further Work
23PU516	Previously Recorded	Not Eligible	No Further Work
23PU661	AOS 115	Potentially Eligible	Phase II Evaluation
23PU662	AOS 116	Not Eligible	No Further Work
23PU663	AOS 119	Potentially Eligible	Phase II Evaluation
Isolate	AOS 117	Not Eligible	No Further Work
Isolate	AOS 118	No Eligible	No Further Work

Of the three other sites not evaluated, two, 23PU288 and 23PU368, both located in the Quarry tract, previously have been determined eligible (Ahler, Kreisa, McDowell, and McGowan 1995; Kreisa 1995). The other site not evaluated, 23PU231, was only partially investigated. This large site, currently estimated to cover 64 ha, was only partially investigated during the current investigations, with most of the site area lying outside of the survey tract. While those areas within the survey tract appeared to lack integrity, the entire site area should be investigated prior to any recommendation.

Fieldwork Recommendations

All potentially NRHP-eligible sites are recommended for Phase II archaeological testing investigations in order to determine eligibility. Procedures considered critical to the evaluation of these sites include the documentation of topographic and stratigraphic site conditions as well as the collection of environmental, historical, functional, and temporal site data. Operationalizing these procedures would include the definition of site boundaries, preparation of a site plan and topographic map, and the excavation of test units in an attempt to evaluate site integrity and determine period of occupation. Aside from these basic tasks, opportunities for the collection of unique sets of data exist at the four site types, cairns, caves/rockshelters, open-air prehistoric, and historic sites, located during the present survey and recommended as potentially eligible.

As discussed earlier, cairns are a unique and sensitive site type at Fort Leonard Wood. Earlier investigations, along with looting, have established their role as mortuary facilities. Because of this, cairns have been subject to widespread looting, and few, if any, remain completely intact, although previous investigations (Niquette 1984; Niquette et al. 1983) have demonstrated that some structural

integrity and human remains are present in some looted cairns. These two factors, association with human remains and impacts from looting, create special difficulties for NRHP evaluation and management of these sites. Phase II excavations of cairns would potentially yield human remains. Excavations would have to be coordinated with the Missouri SHPO and interested Native American tribal authorities. Investigations and artifact disposal would have to conform to Native American Graves Protection and Repatriation Act (NAGPRA) regulations. Alternatively, and more preferable, these sites could be determined eligible for the NRHP based on their unique characteristics. In that case, Phase II investigations should be confined to preparing a site plan and topographic map and a review of extant documentation of the site. The most economical method of nominating this site type would be through the Multiple Property Listing format of the NRHP.

The cave and rockshelter sites at Fort Leonard Wood often possess unique attributes absent in the open-air prehistoric sites. Previous excavations at these sites have identified stratified deposits with well-preserved botanical and faunal assemblages. Radiocarbon assays have been run on charcoal from the deposits, yielding important chronological data. Often, Late Woodland components containing ceramics are present at this site type. Few open-air sites have these attributes. Excavations should be conducted in such a manner to identify and sample potentially intact, stratified deposits. Phase II investigations at these sites should be designed to include the collection and analysis of botanical and faunal remains, and the assay of radiocarbon samples. Data from such excavations can be used to address research questions including assessing the local prehistoric chronology, site function, subsistence, season of occupation, environmental change, and relationships with nearby open-air sites.

Open-air prehistoric sites are widely variable in size, density of artifacts, diversity of artifacts, depth of intact deposits, landscape position, and proximity to water, among other attributes. As such, it has been widely viewed that these open-air sites represent a number of different site types, from large base camps to smaller, seasonally occupied field camps to single occupations. As such, no single strategy for investigation can be offered here. Instead, it should be emphasized that a sample of this wide range of variability needs to be gathered in order to collect data on all site types associated with prehistoric settlement systems. Aside from reemphasizing the need to conduct those basic tasks discussed above, specific research designs should be formulated based on the unique characteristics of each open-air site to be investigated.

Finally, Phase II investigations at historic sites can be oriented towards testing the Upland South model of site location and function proposed by Smith (1993). Phase II investigations should include attempts to determine chronological placement, the nature of the occupation (i.e., whether single or multiple component) and the function of the site in the local settlement system. Prior to any fieldwork, a thorough documentary review should be conducted. This should include a review of available historic maps, aerial photographs, and minimally census and title records. Effort also should be expended to determine whether additional records concerning the occupation of the site are available. Fieldwork should be designed to identify potential subsurface features. This could include the excavation of close-interval shovel probes in a grid pattern or the opportunistic excavation of shovel probes based on the location of above ground structural features. Finally, test units should be placed to investigate subsurface and surface features, if located. Recovery of artifacts from features, in conjunction with historical documentation, will generate Phase II data by which to evaluate the Upland South model proposed by Smith (1993), among other research issues.

One factor that must be considered in the recommendations presented here is that all sites recommended as potentially eligible should be treated as though they are eligible until Phase II investigations have been completed. This means that each of these locations must be managed to insure that the integrity of the site is not compromised. Mechanisms need to be established to keep these locations from being impacted by earth-disturbing activities associated with the training mission of Fort Leonard Wood and with illegal looting activities. Overall, the best strategy is to test sites as quickly as possible to clearly identify those sites in need of long-term management.

Conclusion

This survey documented 76 sites and isolated finds in three survey tracts at Fort Leonard Wood. Twenty-six of these are sites recommended as potentially eligible for the NRHP, and Phase II archaeological evaluation should be conducted for a final determination. Until and upon concurrence by the SHPO that the sites are potentially eligible, Fort Leonard Wood is required to treat these sites as eligible until an NRHP determination is made. Monitoring is needed to prevent adverse impacts to these sites from military training, logging operations and public recreation. Phase II testing of the sites may reduce the number that will need to be managed and protected. Ultimately the data recovered by Phase II testing of these sites will yield information of importance to the understanding of the prehistory and history of the Fort Leonard Wood area.

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APPENDIX A
LIST OF ARTIFACTS

This appendix contains a detailed inventory of the artifacts recovered from the sites investigated during this project. The inventory presents the provenience, count, analytic category, and weight in grams (for lithics) of the material collected during the Phase I survey of 3,500 acres at Fort Leonard Wood. Numbers in parentheses indicate utilized flakes. Faunal remains are not included in this inventory.

The material and related field and analysis documentation are being temporarily curated by the United States Army Construction Engineering Research Laboratories. Interested researchers should contact that agency regarding access to the collection.

Provenience	Artifact Category	Count	Weight (g)
23PU151			
Surface	Primary Flake	2	5.8
	Secondary Flake	9(1)	53.5
	Tertiary Flake	9(1)	49.2
	Bifacial Thinning Flake	1	3.9
	Broken Flake	4	6.2
	Blade	2	6.8
	Block Shatter	2	8.6
	Bipolar Flake	1	20.0
	Ground-stone Mano(?)	1	306.5
	Limestone Sherd, Eroded	1	
	Maramec Plain Sherd	2	
	Maramec Cordmarked Sherd	23	
23PU162			
Posthole 1, 0–10 cm	Multidirectional Core	1	2.0
	Tertiary Flake	1	0.4
	Broken Flake	1	0.2
Posthole 1, 20–30 cm	Broken Flake	1	0.2
Posthole 1, 40–50 cm	Secondary Flake	1	6.5
Posthole 2, 0–10 cm	Tertiary Flake	1	0.1
	Broken Flake	1	2.6
	Block Shatter	1	2.0
Posthole 2, 10–20 cm	Broken Flake	2	0.6
Posthole 2, 20–30 cm	Broken Flake	2	0.7
Posthole 2A, 0–10 cm	Tertiary Flake	1	0.6
	Broken Flake	9	3.0
	Block Shatter	1	0.3
Posthole 2A, 10–20 cm	Tertiary Flake	8	3.1
	Broken Flake	3	0.9
	Block Shatter	4	3.7
Posthole 2A, 20–30 cm	Tertiary Flake	1	0.1
	Broken Flake	1	1.7
Posthole 3, 0–10 cm	Tertiary Flake	2	1.0
	Bipolar Flake	1	1.5
Posthole 3, 40–50 cm	Broken Flake	1	2.0
Posthole 3A, 0–10 cm	Bipolar Core	2	16.5
	Broken Flake	4	3.3
Posthole 3A, 10–20 cm	Secondary Flake	1	2.0
	Tertiary Flake	1	0.1
	Broken Flake	6	3.3
	Blade	1	0.4

Provenience	Artifact Category	Count	Weight (g)
23PU162 continued			
Posthole 3A, 20-30 cm	Tertiary Flake	1	1.7
	Broken Flake	3	0.6
	Blade	1	0.9
	Bipolar Flake	1	0.4
Posthole 4, 0-10 cm	Tertiary Flake	1	0.2
	Broken Flake	1	0.2
Posthole 4, 10-20 cm	Broken Flake	1	0.1
	Block Shatter	1	1.1
Posthole 4, 20-30 cm	Broken Flake	1	0.1
Posthole 4A, 0-10 cm	Tertiary Flake	1	0.3
	Broken Flake	11	2.6
	Block Shatter	2	1.3
Posthole 4A, 10-20 cm	Tertiary Flake	2	0.5
	Broken Flake	4	1.3
	Block Shatter	3	3.0
	Bipolar Flake	1	0.6
Posthole 4A, 20-30 cm	Tertiary Flake	2	0.7
	Broken Flake	1	0.1
	Block Shatter	1	1.7
Posthole 5, 0-10 cm	Broken Flake	1	0.9
Posthole 5, 10-20 cm	Broken Flake	3	1.5
Posthole 5, 20-30 cm	Broken Flake	2	3.2
Posthole 5A, 0-32 cm	Broken Flake	2	1.2
	Ground-stone Mano(?)	1	352.7
Posthole 6, 20-30 cm	Tertiary Flake	1	1.3
	Broken Flake	1	0.5
Posthole 6A, 0-10 cm	Broken Flake	2	0.3
Posthole 6A, 10-20 cm	Secondary Flake	1	1.4
	Tertiary Flake	4	0.8
	Broken Flake	3	1.1
	Block Shatter	1	1.2
Posthole 6A, 20-30 cm	Tertiary Flake	1	0.1
Posthole 7A, 0-10 cm (Bag 147)	Tertiary Flake	1	0.1
Posthole 8, ? cm	Broken Flake	1	0.3
Posthole 9N, 20-30 cm	Tertiary Flake	1	0.1
	Broken Flake	1	0.1
Posthole 9N, 30-40 cm	Tertiary Flake	1	0.3

Provenience	Artifact Category	Count	Weight (g)
23PU162 continued			
Posthole 10, 0–20 cm (Bag 108)	Bipolar Flake	1	2.4
Posthole 10, 20–30 cm (Bag 109)	Broken Flake	2	2.9
Posthole A, 0–15 cm	Tertiary Flake	1	0.7
	Broken Flake	2	0.6
	Broken Flake	3	0.2
Posthole A, 20–30 cm	Tertiary Flake	1	0.4
	Broken Flake	2	1.1
	Block Shatter	1	6.7
Posthole B, 0–10 cm	Bipolar Flake	1	0.4
	Tertiary Flake	1	0.1
	Broken Flake	2	6.3
Posthole B, 10–20 cm	Tertiary Flake	1	0.1
	Broken Flake	2	0.3
	Broken Flake	2	0.6
Posthole C, 0–10 cm	Tertiary Flake	1	0.1
	Broken Flake	2	0.3
	Broken Flake	2	0.6
Posthole C, 10–20 cm	Broken Flake	2	0.6
Posthole D, 0–10 cm	Blade	1	0.3
Posthole NB-1, 0–15 cm	Bipolar Flake	1	0.8
Posthole NB-1, 15–25 cm	Broken Flake	1	0.1
Posthole NB-2, 20–30 cm	Broken Flake	1	0.2
Posthole SB-1, 0–10 cm	Tertiary Flake	1	0.2
Posthole SB-1, 10–20 cm	Bifacial Thinning Flake	1	0.5
Posthole SB-1, 20–30 cm	Broken Flake	1	0.2
Posthole SB-1, 30–40 cm	Broken Flake	1	0.2
	Block Shatter	2	0.8
Posthole SB-2, 0–15 cm	Broken Flake	1	1.2
Posthole 5W-1, 0–10 cm	Blade	1	0.4
Posthole 5W-1, 10–20 cm	Primary Flake	1	0.8
	Broken Flake	2	0.4
	Broken Flake	1	0.1
Posthole 5W-1, 20–30 cm	Tertiary Flake	1	0.2
Posthole 5W-1, 30–40 cm	Broken Flake	1	0.4
	Broken Flake	2	1.2
	Bipolar Flake	1	0.4
Posthole 5W-1, 40–50 cm	Broken Flake	1	1.9
Posthole 10W-1, 0–10 cm	Broken Flake	3	0.7
Posthole 10W-1, 10–20 cm	Broken Flake	4	2.5
Posthole 10W-1, 20–30 cm	Broken Flake		

Provenience	Artifact Category	Count	Weight (g)
23PU162 continued			
Posthole 10W-1, 30-40 cm	Primary Flake	1	2.7
	Tertiary Flake	1	0.6
Posthole 15W-1, 0-10 cm	Broken Flake	1	0.5
Posthole 15W-1, 10-20 cm	Multidirectional Core	2	47.8
	Tertiary Flake	1	0.5
	Broken Flake	2	0.6
	Block Shatter	3	2.3
Posthole 15W-1, 20-30 cm	Secondary Flake	1	0.3
	Tertiary Flake	1	0.2
	Broken Flake	6	3.2
	Block Shatter	1	0.7
Posthole 5N-1, 0-10 cm	Tertiary Flake	1	0.1
	Broken Flake	3	0.5
	Block Shatter	1	0.2
Posthole 5N-1, 10-20 cm	Broken Flake	1	1.8
	Block Shatter	1	3.2
Posthole 5N-1, 30-40 cm	Broken Flake	2	0.3
Posthole 10N-1, 0-10 cm	Multidirectional Core	1	15.1
	Primary Flake	1	8.1
	Tertiary Flake	1	0.4
	Broken Flake	3	4.5
	Unifacial Retouched Flake	1	0.4
Posthole 10N-1, 10-20 cm	Broken Flake	3	0.6
Posthole 10N-1, 20-30 cm	Tertiary Flake	1	0.1
Posthole 10N-1, 40-50 cm	Tertiary Flake	1	0.2
	Broken Flake	1	0.9
Posthole 15N-1, 0-10 cm	Broken Flake	6	4.9
Posthole 15N-1, 10-20 cm	Broken Flake	1	0.4
Posthole 15N-1, 20-30 cm	Broken Flake	2	0.1
Posthole 15N-1, 40-50 cm	Broken Flake	1	0.1
Posthole 10W-5, 10-20 cm	Block Shatter	1	3.6
Posthole 10W-5, 20-30 cm	Broken Flake	1	0.1
	Blade	1	1.1
	Bipolar Flake	1	0.4
Posthole 10W-5, 30-40 cm	Broken Flake	1	0.3
Posthole 15N/10W-1, 0-10 cm	Broken Flake	4	1.4
Posthole 5N/5E, 0-10 cm	Broken Flake	1	0.5

Provenience	Artifact Category	Count	Weight (g)
23PU162 continued			
Posthole 60N/20E, 0-20 cm	Bipolar Core	1	1.6
	Broken Flake	2	1.3
Posthole 120N/20E, 0-20 cm	Tertiary Flake	1	2.0
23PU231 (No AOS No.)			
Surface	Primary Flake	1	5.6
	Secondary Flake	6	20.9
	Tertiary Flake	14	35.1
	Bifacial Thinning Flake	4	1.7
	Broken Flake	65	84.0
	Blade	4	1.8
	Block Shatter	3	6.5
	Smith Basal Notched Point	1	25.1
	Late Archaic Stemmed Cluster Point	1	17.6
	Stone Square Stemmed Point	1	4.6
Posthole 1, 8-17 cm	Broken Flake	2	1.7
Posthole 1A, 10-20 cm	Broken Flake	1	0.1
Posthole 2, 0-15 cm	Broken Flake	1(1)	1.7
Posthole 3, 0-10 cm	Broken Flake	1	0.3
Posthole 4, 0-10 cm	Secondary Flake	1	1.5
	Broken Flake	1	0.1
Posthole 10, 0-10 cm	Broken Flake	1	1.0
Posthole 10, 10-20 cm	Broken Flake	1	0.5
Posthole 11, 0-10 cm	Tertiary Flake	1	2.1
Posthole 12, 0-10 cm	Tertiary Flake	1	1.8
	Broken Flake	3	0.9
	Block Shatter	1	7.1
Posthole 13, 0-10 cm	Broken Flake	2	0.2
Posthole 13, 10-20 cm	Block Shatter	1	0.1
Posthole 14, 10-15 cm	Block Shatter	1	11.0
Posthole 15, 0-10 cm	Block Shatter	1	1.2

Provenience	Artifact Category	Count	Weight (g)
23PU231 (AOS 123)			
Surface	Multidirectional Core	1	36.7
	Primary Flake	3	36.4
	Secondary Flake	8	14.9
	Tertiary Flake	15	20.9
	Bifacial Thinning Flake	11	11.4
	Broken Flake	90	83.0
	Block Shatter	6	13.8
	Unifacial End Scraper	1	4.5
	Point Fragment (Saratoga Cluster?)	1	2.6
Posthole 1, 0-10 cm	Bifacial Thinning Flake	1	0.4
Posthole 3, 10-20 cm	Bifacial Thinning Flake	1	0.3
	Broken Flake	8	2.2
	Block Shatter	2	3.4
Posthole 4, 0-10 cm	Broken Flake	2	0.6
Posthole 5, 10-18 cm	Broken Flake	1	0.2
Posthole 6, 0-10 cm	Broken Flake	1	0.1
Posthole 7, 0-10 cm	Broken Flake	2	13.4
Posthole 7, 10-25 cm	Secondary Flake	1	0.3
	Tertiary Flake	1	0.2
	Broken Flake	3	0.8
	Block Shatter	1	0.2
Posthole 7, 25-30 cm	Block Shatter	1	0.1
Posthole 8, 0-10 cm	Tertiary Flake	2	1.5
	Broken Flake	1	1.8
Posthole 8, 10-20 cm	Tertiary Flake	1	0.2
	Broken Flake	1	0.1
Posthole 9, 0-10 cm	Thick Biface Fragment	1	16.6
Posthole 10, 10-20 cm	Broken Flake	1	0.1
Posthole 11, 10-15 cm	Tertiary Flake	1	1.3
	Broken Flake	2	0.5
	Block Shatter	1	1.0
Posthole 12, ? cm	Tertiary Flake	1	0.3
	Broken Flake	1	0.1
	Block Shatter	1	1.2

Provenience	Artifact Category	Count	Weight (g)
23PU231 (AOS 123) continued			
Posthole 13, 20–30 cm	Broken Flake	1	0.1
Posthole 14, 10–17 cm	Broken Flake	2	1.9
	Block Shatter	1	3.6
23PU231 (AOS 124)			
Posthole 2, 10–20 cm	Tertiary Flake	1	0.1
	Broken Flake	1	0.8
Posthole 3, 0–10 cm	Bipolar Flake	2	0.7
Posthole 3, 10–20 cm	Bipolar Flake	1	1.0
	Thin Biface Fragment	1	8.7
Posthole 4, 0–10 cm	Broken Flake	2	0.8
Posthole 7, 10–20 cm	Broken Flake	1	0.4
Posthole 8, 10–20 cm	Thin Biface Fragment	1	9.0
Posthole 9, 0–10 cm	Broken Flake	1	0.2
23PU241 (AOS 151)			
Surface	Secondary Flake	3	8.5
	Tertiary Flake	2	13.2
	Broken Flake	11	18.8
	Block Shatter	7	11.7
Posthole 1, 0–10 cm	Broken Flake	1	1.1
Posthole 1, 10–20 cm	Broken Flake	1	0.4
Posthole 2, 0–10 cm	Tertiary Flake	1	0.1
	Bifacial Thinning Flake	1	0.1
	Blade	2	2.9
Posthole 2, 10–20 cm	Tertiary Flake	1	0.3
	Broken Flake	1	0.1
Posthole 3, 0–10 cm	Broken Flake	1	0.1
	Projectile Point Fragment	1	1.6
Posthole 3, 10–20 cm	Broken Flake	1	0.2
Posthole 4, 0–19 cm	Secondary Flake	1	0.3
	Broken Flake	3	1.0
	Block Shatter	1	0.1
Posthole 4, 19–30 cm	Broken Flake	3	0.4
Posthole 5, 10–20 cm	Broken Flake	1	0.2

Provenience	Artifact Category	Count	Weight (g)
23PU241 (AOS 151) continued			
Posthole 5, 20-30 cm	Tertiary Flake	1	0.1
Posthole 6, 10-20 cm	Broken Flake	1	2.3
Posthole 7, 0-10 cm	Secondary Flake	1	3.2
	Broken Flake	4	6.5
Posthole 8, 0-10 cm	Broken Flake	2	0.4
Posthole 8, 10-20 cm	Block Shatter	2	1.4
Posthole 9, 0-10 cm	Tertiary Flake	1	0.2
	Broken Flake	2	1.2
	Block Shatter	1	2.6
Posthole 10, 0-20 cm	Broken Flake	2	0.2
Posthole 11, 20-30 cm	Broken Flake	1	0.4
Posthole 12, 20-30 cm	Broken Flake	1	0.5
Posthole 13, 0-10 cm	Broken Flake	2	0.3
	Block Shatter	3	2.3
Posthole 13, 20-30 cm	Broken Flake	2	0.3
Posthole 14, 0-10 cm	Tertiary Flake	1	0.6
	Broken Flake	1	0.2
Posthole 14, 20-30 cm	Block Shatter	1	3.1
Posthole 15, 0-10 cm	Tertiary Flake	1	0.2
Posthole 16, 10-20 cm	Broken Flake	2	0.3
Posthole 17, 0-10 cm	Broken Flake	1	0.1
Posthole 18, 0-10 cm	Broken Flake	1	0.2
Posthole 18, 10-20 cm	Tertiary Flake	1	0.1
	Broken Flake	2	0.2
	Block Shatter	1	1.6
Posthole 19, 0-10 cm	Primary Flake	1	0.2
	Tertiary Flake	1	0.1
	Block Shatter	1	0.1
Posthole 19, 10-20 cm	Broken Flake	1	0.6
Posthole 20, 10-20 cm	Broken Flake	2	0.6

Provenience	Artifact Category	Count	Weight (g)
23PU241 (AOS 151) continued			
Posthole 21, 20–30 cm	Broken Flake	1	0.1
Posthole 22, 10–20 cm	Broken Flake	2	4.8
Posthole 23, 0–20 cm	Broken Flake	2	0.7
	Blade	1	11.5
Posthole 24, 0–10 cm	Broken Flake	2	0.2
Posthole 25, 0–16 cm	Broken Flake	2	0.4
Posthole 25, 16–20 cm	Tertiary Flake	2	0.1
	Broken Flake	1	0.1
Posthole 26, 0–16 cm	Bifacial Thinning Flake	1	0.2
	Broken Flake	7	1.3
Posthole 26, 16–21 cm	Tertiary Flake	1	0.1
Posthole 27, 0–20 cm	Block Shatter	1	0.3
23PU241 (AOS 152)			
Posthole 1, 10–20 cm	Tertiary Flake	1	0.1
	Broken Flake	1	0.1
Posthole 1, 20–30 cm	Broken Flake	1	0.1
Posthole 1, 30–40 cm	Tertiary Flake	1	0.1
Posthole 2, 10–20 cm	Broken Flake	3	0.4
	Bipolar Flake	1	0.7
Posthole 3, ? cm	Tertiary Flake	1	0.2
	Broken Flake	2	0.2
	Bipolar Flake	1	1.2
Posthole 4, 0–10 cm	Primary Flake	1	11.7
Posthole 4, 10–20 cm	Primary Flake	1	8.0
Posthole 5, 0–10 cm	Broken Flake	1	0.6
	Bipolar Flake	1	2.4
23PU241 (AOS 153)			
Surface	Thin Biface Fragment	1	13.3
Posthole 1, 0–10 cm	Broken Flake	5	2.5
Posthole 1, 10–20 cm	Tertiary Flake	1	0.2
	Broken Flake	2	0.6
	Block Shatter	1	0.5

Provenience	Artifact Category	Count	Weight (g)
23PU241 (AOS 153) continued			
Posthole 2, 0-10 cm	Broken Flake	2	0.2
Posthole 3, ? cm	Broken Flake	1	0.3
Posthole 4, 0-10 cm	Broken Flake	1	1.9
23PU241 (AOS 154)			
Posthole 1, 10-20 cm	Broken Flake	2	4.0
Posthole 2, 20-30 cm	Block Shatter	1	1.5
	Thin Biface Fragment	1	2.4
Posthole 2, 30-40 cm	Bipolar Core	1	5.0
	Unifacial Retouched Flake	1	0.3
Posthole 3, 0-10 cm	Tertiary Flake	2	12.7
Posthole 6, 0-10 cm	Tertiary Flake	1	12.7
23PU241 (AOS 155)			
Posthole 1, 0-22 cm	Broken Flake	1(1)	0.9
	Bipolar Flake	1	4.2
Posthole 2, 0-20 cm	Tertiary Flake	1	0.4
23PU241 (AOS 156)			
Posthole 1, 10-20 cm	Primary Flake	1	0.4
	Broken Flake	1	0.8
23PU241 (AOS 157)			
Posthole 1, 10-20 cm	Broken Flake	1	0.7
23PU241 (AOS 158)			
Posthole 1, 0-10 cm	Primary Flake	1	3.6
	Broken Flake	1	0.9
Posthole 2, 10-20 cm	Broken Flake	1	0.3
Posthole 3, 0-10 cm	Broken Flake	1	0.2
Posthole 4, 0-10 cm	Tertiary Flake	1	0.6
	Broken Flake	1	0.2
	Block Shatter	1	3.0
23PU241 (AOS 160)			
Posthole 1, 0-10 cm	Block Shatter	1	3.1

Provenience	Artifact Category	Count	Weight (g)
23PU241 (AOS 161)			
Posthole 1, 10–20 cm	Secondary Flake	1	2.7
23PU241 (AOS 164)			
Posthole 1, 0–14 cm	Broken Flake	1	0.1
Posthole 2, 0–10 cm	Broken Flake	1	0.1
Posthole 3, 0–22 cm	Broken Flake	1	0.7
23PU241 (AOS 168)			
Posthole 1, 20–30 cm	Primary Flake	2	0.2
	Broken Flake	2	0.2
	Block Shatter	2	1.6
Posthole 1, 30–40 cm	Broken Flake	1	0.4
	Block Shatter	1	0.4
Posthole 2, 0–10 cm	Broken Flake	1	0.6
23PU241 (AOS 171)			
Posthole 1, 0–10 cm	Tertiary Flake	1	0.8
Posthole 2, 0–10 cm	Broken Flake	1	0.9
Posthole 2, 10–20 cm	Broken Flake	1	0.1
23PU241 (AOS 176)			
Posthole 1, 0–10 cm	Tertiary Flake	1	0.2
	Broken Flake	2	0.9
Posthole 2, 0–10 cm	Broken Flake	2	0.5
Posthole 3, 0–10 cm	Broken Flake	1	0.1
	Bipolar Flake	1	5.8
23PU241 (AOS 177)			
Surface	Bipolar Core	2	15.8
	Broken Flake	1	0.3
	Thin Biface Fragment	1	19.1
Posthole 1, 0–15 cm	Tertiary Flake	1	0.1
Posthole 1, 15–25 cm	Tertiary Flake	1	1.3
Posthole 2, 0–10 cm	Broken Flake	1	0.1
Posthole 2, 10–20 cm	Broken Flake	1	0.1
Posthole 3, 10–25 cm	Broken Flake	1	0.1

Provenience	Artifact Category	Count	Weight (g)
23PU241 (AOS 177) continued			
Posthole 4, 0-10 cm	Tertiary Flake	1	0.7
Posthole 4, 10-20 cm	Tertiary Flake	2	0.3
Posthole 4, 20-30 cm	Unifacial Retouched Flake	1	0.6
Posthole 5, 10-20 cm	Tertiary Flake	1	0.1
	Broken Flake	2	0.2
23PU241 (AOS 186)			
Posthole 1, 0-10 cm	Bipolar Flake	1	1.0
Posthole 2, 10-20 cm	Bipolar Flake	1	14.8
Posthole 3, 0-10 cm	Tertiary Flake	1	1.2
23PU241 (AOS 188)			
Surface?	Tertiary Flake	1	0.1
23PU270			
Surface	Primary Flake	2	10.6
	Secondary Flake	2	8.9
	Broken Flake	1	1.3
	Block Shatter	6	14.8
	Maramec Cordmarked Sherd	2	
	Maramec Plain Sherd	1	
	Burnished Plain Sherd	2	
	Dolomite-Tempered Eroded Sherd	1	
23PU288			
Posthole 1, 0-10 cm	Unifacial Retouched Flake	1	4.8
Posthole 2, 0-10 cm	Broken Flake	5	1.7
	Block Shatter	1	0.2
Posthole 3, 0-10 cm	Broken Flake	1	0.2
23PU314			
Posthole 1, 10-15 cm	Secondary Flake	2(1)	24.0
	Plastic Fragment	1	
23PU319			
Surface	Secondary Flake	1	5.0
	Tertiary Flake	2	4.9
	Rough Biface Fragment	2	76.4
Posthole 1, 0-10 cm	Tertiary Flake	1	0.3
Posthole 1, 10-20 cm	Tertiary Flake	1	1.4

Provenience	Artifact Category	Count	Weight (g)
23PU363			
Surface	Secondary Flake	1	6.4
	Projectile Point Tip	1	1.5
	1984 Five-Cent Piece	1	
23PU368			
Posthole 1, 0–10 cm	Broken Flake	2	7.5
Posthole 1, 10–20 cm	Undecorated Whiteware	4	
Posthole 1, 20–30 cm	Block Shatter	1	0.8
	Annular Whiteware	1	
Posthole 1, 30–40 cm	Broken Flake	1	3.0
23PU509			
Posthole 1, 0–21 cm	Clear Flat Glass	1	
	Undecorated Ironstone	1	
	Can Fragment	2	
Posthole 2, 0–23 cm	Undecorated Whiteware	2	
	Salt-Glazed/Albany-Slipped Stoneware	1	
Posthole 3, 0–10 cm	Clear Bottle(?) Glass	1	
23PU515			
Posthole 1, 0–10 cm	Clear Bottle Glass	3	
	Clear Flat Glass	1	
	Clear Lamp Glass	1	
	Wire-Cut Nail	1	
23PU635			
Surface	Bipolar Flake	2	19.1
	Maramec Cordmarked Jar Rim	1	
	Maramec Cordmarked Body	4	
	Limestone-Tempered Eroded Sherd	1	
23PU636			
Surface	Bipolar Flake	2	14.5
23PU637			
Posthole 1, 0–22 cm	Tertiary Flake	1	0.3
Posthole 2, 0–14 cm	Tertiary Flake	1	0.1
Posthole 3, 0–19 cm	Tertiary Flake	1	0.1
Posthole 4, 0–21 cm	Bipolar Flake	1	0.9
Posthole 5, 0–32 cm	Tertiary Flake	1	0.1

Provenience	Artifact Category	Count	Weight (g)
23PU637 continued			
Posthole 6, 0-18 cm	Broken Flake	2	0.5
23PU639			
Posthole 1, 10-20 cm	Broken Flake	1	0.8
Posthole 3, 0-10 cm	Bifacial Thinning Flake	1	2.4
Posthole 6, 0-10 cm	Bipolar Flake	1	0.2
23PU640			
Posthole 1, 0-10 cm	Broken Flake	2	0.8
Posthole 1, 10-20 cm	Broken Flake	1	0.5
Posthole 2, 0-20 cm	Tertiary Flake	1	9.6
	Broken Flake	1	1.8
23PU641			
Posthole 1, 10-20 cm	Broken Flake	1	0.6
Posthole 2, 0-10 cm	Tertiary Flake	1	0.2
Posthole 5, 20-30 cm	Broken Flake	2	2.1
Posthole 6, 10-20 cm	Broken Flake	1	0.1
23PU642			
Posthole 1, 10-20 cm	Thin Biface Fragment	1	3.3
Posthole 2, 10-20 cm	Broken Flake	1	0.2
Posthole 3, 10-20 cm	Tertiary Flake	1	0.9
	Broken Flake	1	0.1
Posthole 4, 0-10 cm	Block Shatter	1	0.8
Posthole 4, 10-20 cm	Block Shatter	1	12.0
Posthole 4, 20-30 cm	Broken Flake	1	0.1
Posthole 5, 0-10 cm	Tertiary Flake	1	0.1
	Broken Flake	1	0.3
Posthole 9, 0-10 cm	Broken Flake	4	0.6
Posthole 9, 10-20 cm	Secondary Flake	1	0.3
	Broken Flake	2	0.1
Posthole 11, 0-10 cm	Broken Flake	1	0.1
	Thin Biface Fragment	1	4.2

Provenience	Artifact Category	Count	Weight (g)
23PU642 continued			
Posthole 13, 0-19 cm	Broken Flake	1	1.4
Posthole 14, 10-20 cm	Broken Flake	1	1.0
Posthole 15, 0-10 cm	Broken Flake	1	6.4
Posthole 15, 10-20 cm	Tertiary Flake	1	0.2
	Block Shatter	1	0.1
Posthole 17, 10-20 cm	Broken Flake	1	0.9
Posthole 18, 0-10 cm	Broken Flake	1	0.6
Posthole 19, 0-10 cm	Secondary Flake	1	1.4
	Broken Flake	1	0.3
Posthole 20, 0-18 cm	Bifacial Thinning Flake	1	0.4
	Broken Flake	1	0.9
	Block Shatter	1	0.1
Posthole 20, 18-30 cm	Tertiary Flake	1	0.1
	Bifacial Thinning Flake	1	0.8
	Broken Flake	1	0.2
Posthole 20, 30-40 cm	Broken Flake	5	0.4
Posthole 20, 40-50 cm	Tertiary Flake	1	0.1
	Broken Flake	3	0.2
23PU643			
Posthole 1, 10-20 cm	Broken Flake	1	0.5
Posthole 2, 10-20 cm	Broken Flake	1	0.1
Posthole 3, 10-20 cm	Tertiary Flake	1	0.2
23PU644			
Posthole 1, 20-30 cm	Tertiary Flake	1	0.2
	Broken Blade	1	2.8
Posthole 2, 10-20 cm	Unifacial Retouched Flake	1	2.0
Posthole 3, 0-10 cm	Tertiary Flake	1	2.1
Posthole 3, 10-20 cm	Broken Flake	3	1.9
Posthole 4, 10-20 cm	Broken Flake	1(1)	1.5
Posthole 5, 0-10 cm	Broken Flake	1	2.4
Posthole 7, 0-10 cm	Broken Flake	2	0.5

Provenience	Artifact Category	Count	Weight (g)
23PU644 continued			
Posthole 7, 10-20 cm	Broken Flake	1	0.1
23PU645			
Surface	Broken Flake	2	2.6
Posthole 1, 0-10 cm	Tertiary Flake	1	0.1
	Broken Flake	3	0.7
Posthole 2, 0-10 cm	Broken Flake	2	2.5
Posthole 3, 0-10 cm	Tertiary Flake	2	0.3
	Broken Flake	1	0.3
23PU646			
Surface	Flat Metal	1	
23PU647			
Surface	Thick Biface Fragment	1	29.1
Posthole 1, 0-15 cm	Tertiary Flake	1	0.9
	Broken Flake	1	0.7
23PU648			
Posthole 1, 0-10 cm	Tertiary Flake	2	0.8
Posthole 2, 0-10 cm	Broken Flake	2	0.6
Posthole 2, 10-20 cm	Tertiary Flake	1	0.2
	Broken Flake	1	0.4
Posthole 3, 20-30 cm	Tertiary Flake	1	2.4
	Broken Flake	3	0.6
	Blade	1	0.4
Posthole 4, 0-10 cm	Broken Flake	3	3.3
	Blade	1	1.4
Posthole 5, 0-10 cm	Broken Flake	4	0.9
Posthole 6, 0-10 cm	Tertiary Flake	1	0.2

Provenience	Artifact Category	Count	Weight (g)
23PU649			
Surface	Undecorated Ironstone	2	
	Green Glass Body (Canning Jar?)	2	
	Clear Pressed/Cut Glass	1	
	Clear Mold-Made Ink Jar	1	
	Clear Screw-Top, Snap-Case Condiment Jar	1	
	Cut Glass?	1	
Posthole 1, 0–10 cm	Clear Bottle Fragment	1	
	Flat Glass	1	
Posthole 7, 0–10 cm	Metal Rasp/File	1	
23PU650			
Posthole 1, 0–10 cm	Bristol-Slipped Stoneware	1	
	Pink Pressed/Cut Glass	1	
	Wire-Cut Nail	1	
	Metal Rasp/File	1	
Posthole 2, 10–20 cm	Secondary Flake	1	6.3
	Broken Flake	1	0.1
23PU651			
Surface	Multidirectional Core	1	332.0
	Primary Flake	1	0.3
	Tertiary Flake	2	0.3
	Broken Flake	8	3.1
	Thick Biface Fragment	1	12.4
Posthole 1, 0–13 cm	Tertiary Flake	5	0.9
	Broken Flake	5	0.6
Posthole 1, 13–20 cm	Broken Flake	2	0.7
Posthole 2, 0–10 cm	Tertiary Flake	1	0.9
	Broken Flake	2	1.2
Posthole 3, 0–10 cm	Broken Flake	2	0.8
Posthole 4, 0–10 cm	Broken Flake	1	0.7
	Clear Lamp(?) Glass	1	
Posthole 5, 0–15 cm	Multidirectional Core	1	13.8
	Broken Flake	2	0.6
Posthole 6, 0–10 cm	Tertiary Flake	1	27.6

Provenience	Artifact Category	Count	Weight (g)
23PU651 continued			
Posthole 7, 0-10 cm	Broken Flake	1	0.3
	Thin Biface	1	9.7
Posthole 8, 0-10 cm	Tertiary Flake	1	0.1
	Broken Flake	1	0.1
Posthole 9, 0-10 cm	Secondary Flake	1	2.8
Posthole 9, 10-20 cm	Primary Flake	1	4.4
	Tertiary Flake	1	0.2
	Broken Flake	1	1.0
23PU652			
Posthole 1, 0-10 cm	Tertiary Flake	3	0.6
	Broken Flake	1	0.5
	Block Shatter	2	1.3
Posthole 1, 10-20 cm	Tertiary Flake	1	0.1
	Broken Flake	3	0.3
Posthole 2, 0-10 cm	Tertiary Flake	2	1.2
Posthole 3, 10-20 cm	Block Shatter	1	1.4
Posthole 4, 0-15 cm	Tertiary Flake	1	0.1
	Broken Flake	5	8.4
Posthole 5, 0-10 cm	Tertiary Flake	1	0.1
	Broken Flake	2	0.2
Posthole 6, 0-10 cm	Primary Flake	1	0.9
	Broken Flake	1	0.7
	Thin Biface Fragment	1	1.6
Posthole 7, 0-10 cm	Tertiary Flake	1	0.1
Posthole 7, 10-20 cm	Tertiary Flake	1	1.3
	Broken Flake	3	1.5
	Unifacial Retouched Flake	1	0.5
Posthole 8, 0-10 cm	Tertiary Flake	1	0.3
Posthole 9, 0-10 cm	Broken Flake	2	1.2
Posthole 10, 0-10 cm	Broken Flake	2	1.3
Posthole 11, Surface	Broken Flake	1	1.0

Provenience	Artifact Category	Count	Weight (g)
23PU652 continued			
Posthole 12, 0–10 cm	Secondary Flake	1	1.2
	Broken Flake	1	0.2
Posthole 13, 0–10 cm	Thin Biface Fragment	1	0.6
Posthole 14, 0–10 cm	Broken Flake	2	0.8
Posthole 15, 0–10 cm	Bipolar Core	1	10.9
	Secondary Flake	1	5.1
Posthole 16, 10–20 cm	Tertiary Flake	1	0.1
	Broken Flake	2	0.3
Posthole 17, 0–18 cm	Secondary Flake	1	9.1
	Broken Flake	2	1.8
Posthole 18, 0–10 cm	Thin Biface Fragment	1	14.3
Posthole 19, 10–20 cm	Broken Flake	1	0.2
Posthole 20, 0–16 cm	Secondary Flake	1	0.1
	Tertiary Flake	1	0.1
	Broken Flake	5	4.7
Posthole 20, 16–20 cm	Secondary Flake	1	7.7
	Tertiary Flake	2	0.1
Posthole 20, 20–30 cm	Tertiary Flake	1	0.1
Posthole 21, 0–15 cm	Broken Flake	1	0.2
Posthole 21, 15–25 cm	Broken Flake	1	1.0
Posthole 22, 0–10 cm	Broken Flake	1	0.1
Posthole 23, 0–10 cm	Broken Flake	1	0.8
Posthole 24, 0–10 cm	Secondary Flake	1	7.6
Posthole 25, 10–15 cm	Thin Biface Fragment	1	11.9
Posthole 26, 0–10 cm	Broken Flake	1	0.5
23PU653			
Posthole 1, 0–15 cm	Unifacial Retouched Flake	1	5.4
Posthole 2, 10–20 cm	Bifacial Thinning Flake	1	0.1
Posthole 5, 20–30 cm	Bipolar Flake	1	1.5

Provenience	Artifact Category	Count	Weight (g)
23PU654			
Posthole 1, 0-30 cm	Tertiary Flake	1	0.2
	Broken Flake	5	0.5
	Block Shatter	1	0.7
Posthole 2, 0-18 cm	Broken Flake	1	0.2
Posthole 3, 0-18 cm	Tertiary Flake	1	0.1
Posthole 4, 0-20 cm	Tertiary Flake	1	0.1
	Broken Flake	2	0.8
Posthole 5, 0-19 cm	Tertiary Flake	1	1.4
	Broken Flake	4	2.7
	Blade	1	1.2
23PU655			
Posthole 1, 20-30 cm	Broken Flake	1	0.5
Posthole 1, 40-50 cm	Broken Flake	1	0.7
Posthole 3, 40-50 cm	Tertiary Flake	1	0.1
Posthole 5, 0-20 cm	Broken Flake	3	0.9
Posthole 5, 30-40 cm	Broken Flake	1	0.2
Posthole 7, 0-20 cm	Secondary Flake	1	18.4
23PU657			
Posthole 1, 10-20 cm	Bifacial Thinning Flake	1	0.4
	Broken Flake	1	0.8
Posthole 1-1W, 10-20 cm	Broken Flake	1	0.8
Posthole 1-2W, 0-10 cm	Secondary Flake	1	3.4
Posthole 1-2W, 10-20 cm	Primary Flake	1	1.3
	Tertiary Flake	1	1.6
Posthole SB-1, 0-10 cm	Broken Flake	2	1.1
Posthole SB-1, 10-20 cm	Broken Flake	2	0.6
Posthole SB-1, 20-30 cm	Tertiary Flake	1	0.4
	Broken Flake	3	2.0
Posthole EB-1, 0-10 cm	Primary Flake	1	0.2
Posthole EB-1, 10-20 cm	Tertiary Flake	1	6.7
Posthole EB-1, 20-30 cm	Tertiary Flake	1	0.8
	Broken Flake	2	1.4
Posthole EB-1, 30-40 cm	Tertiary Flake	1	0.2

Provenience	Artifact Category	Count	Weight (g)
23PU657 continued			
Posthole 1-E2, 10–20 cm	Tertiary Flake	1	0.3
	Broken Flake	1	2.1
Posthole 1-E2, 30–40 cm	Broken Flake	1(1)	1.7
23PU658			
Posthole 1, 0–10 cm	Tertiary Flake	2(1)	2.4
Posthole 1, 10–20 cm	Secondary Flake	1	0.3
	Tertiary Flake	2(1)	2.5
23PU659			
Posthole 1, 10–20 cm	Tertiary Flake	1	0.2
Posthole 1, 20–30 cm	Broken Flake	1	1.8
Posthole WB-1, 20–30 cm	Block Shatter	1	0.3
Posthole NB-1, 0–10 cm	Broken Flake	1	0.2
Posthole NB-1, 10–20 cm	Tertiary Flake	1	2.9
23PU660			
Posthole 1, 10–20 cm	Broken Flake	2	0.5
Posthole WB-1, 0–10 cm	Broken Flake	1	0.5
Posthole WB-1, 10–20 cm	Tertiary Flake	1	2.2
	Rough Biface Fragment	1	24.0
	Broken Flake	3	1.4
Posthole WB-1, 20–30 cm	Broken Flake	3	0.6
Posthole WB-2, 0–20 cm	Secondary Flake	1	1.7
	Tertiary Flake	1	0.2
	Broken Flake	5	1.2
	Bifacial Thinning Flake	1	0.1
Posthole WB-2, 30–40 cm			
Posthole WB-3, 0–10 cm	Broken Flake	2	3.1
Posthole WB-3, 10–20 cm	Broken Flake	3	2.7
Posthole WB-3, 30–40 cm	Block Shatter	1	0.7
Posthole EB-1, 10–20 cm	Broken Flake	2	0.9
Posthole 1-2W, 10–20 cm	Secondary Flake	1	1.0
	Broken Flake	4	1.7
	Bipolar Flake	1	0.3
Posthole 1-N1, 20–30 cm	Tertiary Flake	1	0.3
	Broken Flake	4	2.5

Provenience	Artifact Category	Count	Weight (g)
23PU660 continued			
Posthole 1-N10, Surface	Projectile Point Tip	1	0.6
Posthole 1-N10, 0-10 cm	Broken Flake	1	0.1
Posthole 1-N10, 20-30 cm	Secondary Flake	1	0.1
	Block Shatter	2	2.8
Posthole 1-S1, 10-20 cm	Tertiary Flake	1	0.2
Posthole SB-1, 0-10 cm	Broken Flake	3	2.0
	Block Shatter	1	0.5
Posthole SB-2, 10-20 cm	Broken Flake	2	0.6
Posthole SB-3, 0-10 cm	Broken Flake	3	2.1
Posthole SB-3, 10-20 cm	Broken Flake	1	0.6
Posthole 10N5W, 0-10 cm	Broken Flake	1	0.3
Posthole 10N5W, 30-40 cm	Tertiary Flake	1	0.2
	Broken Flake	2	2.8
	Block Shatter	1	0.6
Posthole 3W1S, 20-30 cm	Broken Flake	1	0.7
Posthole 15S10W, 10-20 cm	Secondary Flake	1	0.4
Posthole 15S15W, 10-20 cm	Block Shatter	2	4.7
Posthole 18W S/W, 0-30 cm	Broken Flake	4	3.2
Posthole SE-1, 10-20 cm	Block Shatter	1	3.2
Posthole SE-1, 20-30 cm	Broken Flake	2	1.0
Posthole SE-2, 0-10 cm	Broken Flake	1	0.1
Posthole SE-2, 10-20 cm	Broken Flake	1	0.1
Posthole SE-3, 0-10 cm	Broken Flake	1	0.4
	Block Shatter	1	0.4
Posthole 2W of 3S, 0-10 cm	Broken Flake	1	0.2
Posthole WB of 3S, 10-20 cm	Bifacial Thinning Flake	1	0.9
Posthole WB of 3S, 20-30 cm	Broken Flake	1	0.8
Posthole NE-1, 10-20 cm	Broken Flake	1	0.3
Posthole NE-2, 10-20 cm	Bifacial Thinning Flake	1	0.3

Provenience	Artifact Category	Count	Weight (g)
23PU660 continued			
Posthole NE-3, 0–10 cm	Broken Flake	1	0.3
Posthole NE-4, 0–10 cm	Broken Flake	2	1.0
Posthole A.T. 2, 0–20 cm	Bifacial Thinning Flake	1	0.4
	Broken Flake	1	0.1
23PU661			
Posthole 1, 0–10 cm	Broken Flake	1	0.7
Posthole 2, 0–10 cm	Broken Flake	1	0.4
Posthole 3, 0–10 cm	Broken Flake	1	0.3
Posthole 3, 10–20 cm	Broken Flake	2	3.0
Posthole 4, 0–10 cm	Block Shatter	1	0.5
Posthole 4, 10–20 cm	Block Shatter	2	1.0
Posthole 5, depth unknown	Broken Flake	1	0.1
Posthole 6, depth unknown	Broken Flake	2	0.7
Posthole 10, 0–10 cm	Broken Flake	1	0.3
	Block Shatter	1	0.5
Posthole 10, 10–20 cm	Tertiary Flake	1	0.1
	Broken Flake	1	0.4
Posthole 11, 10–20 cm	Block Shatter	1	0.7
Posthole 12, 0–10 cm	Tertiary Flake	1	0.2
	Block Shatter	1	2.4
Posthole 14, 0–10 cm	Bifacial Thinning Flake	1	0.2
	Broken Flake	1	0.4
	Block Shatter	1	0.8
Posthole 14, 10–20 cm	Broken Flake	1	0.4
Posthole 14, 20–30 cm	Tertiary Flake	1	0.3
	Broken Flake	1	0.1
	Block Shatter	1	0.5
	Bipolar Flake	1	1.1
Posthole 16, 0–10 cm	Tertiary Flake	2	0.2
	Block Shatter	1	0.4

Provenience	Artifact Category	Count	Weight (g)
23PU662			
Posthole 1, 0-10 cm	Broken Flake	1	0.4
Posthole 1, 10-20 cm	Broken Flake	3	1.7
Posthole 2, 0-10 cm	Secondary Flake	1	12.6
Posthole 3, 0-10 cm	Broken Flake	1	0.1
Posthole 4, 0-10 cm	Tertiary Flake	1	2.7
Posthole 4, 20-30 cm	Broken Flake	1	1.3
Posthole 5, 0-10 cm	Tertiary Flake	1	1.1
	Broken Flake	2	1.2
Posthole 20E60N, 20-40 cm	Broken Flake	1	0.3
23PU663			
Surface	Clear Glass Fragment	1	
Posthole 2, 0-10 cm	Undecorated Whiteware Sherd	1	
23PU664			
Posthole 1, 10-20 cm	Tertiary Flake	1	5.1
Posthole 2, 0-10 cm	Broken Flake	2	0.7
	Bipolar Flake	1	6.0
Posthole 3, 0-10 cm	Tertiary Flake	1	0.6
Posthole 4, 0-10 cm	Bipolar Flake	1	0.4
Posthole 4, 10-20 cm	Broken Flake	1	0.7
23PU665			
Posthole 1, 10-20 cm	Tertiary Flake	1	0.6
	Broken Flake	2	0.2
Posthole 2, 10-20 cm	Broken Flake	1	2.0
Posthole 2, 20-30 cm	Broken Flake	1	0.9
Posthole 3, 10-20 cm	Tertiary Flake	1	0.1
Posthole 3, 20-30 cm	Broken Flake	1	0.1
Posthole 4, 20-30 cm	Secondary Flake	1	1.1
Posthole 4, 30-35 cm	Broken Flake	1	0.4
Posthole 7, 0-15 cm	Broken Flake	1	0.2

Provenience	Artifact Category	Count	Weight (g)
23PU666			
Posthole 1, 0–10 cm	Broken Flake	2	0.5
Posthole 2, 20–30 cm	Glass Canning Jar Base, 1915	1	
Posthole 3, 0–10 cm	Tertiary Flake	1	0.1
Posthole 4, 0–10 cm	Undecorated Ironstone Sherd	2	
Posthole 4, 10–20 cm	Burnt Undecorated Ironstone Sherd	1	
Posthole 5, 10–20 cm	Secondary Flake	1	2.0
23PU667			
Posthole 1, 0–10 cm	Broken Flake	1	1.0
	Bipolar Flake	1	4.3
Posthole 1, 20–30 cm	Broken Flake	1	0.6
Posthole B-1, 0–10 cm	Broken Flake	3	3.7
Posthole B-1, 10–20 cm	Broken Flake	1	0.2
	Bipolar Flake	1	1.0
Posthole B-1, 20–30 cm	Bipolar Flake	1	0.8
Posthole 2, 0–10 cm	Tertiary Flake	1	0.1
	Broken Flake	3	1.5
Posthole 3, 20–30 cm	Tertiary Flake	1	0.1
	Broken Flake	1	0.3
Posthole 4, 0–10 cm	Secondary Flake	1	0.2
	Tertiary Flake	1	1.8
Posthole 4, 10–20 cm	Tertiary Flake	1	0.1
Posthole 4, 20–30 cm	Broken Flake	1	0.1
Posthole 5, 0–10 cm	Secondary Flake	1	0.6
	Broken Flake	1	0.1
Posthole 6, 20–30 cm	Tertiary Flake	1	0.1
Posthole 6, 30–35 cm	Tertiary Flake	2	0.2
	Broken Flake	4	0.4
Posthole 7, 10–20 cm	Tertiary Flake	1	0.2
	Bipolar Flake	1	0.4
Posthole 8, 0–10 cm	Broken Flake	1	0.1
Posthole 9, 0–10 cm	Bipolar Flake	1	5.0

Provenience	Artifact Category	Count	Weight (g)
23PU667 continued			
Posthole 10, 0-15 cm	Broken Flake	2	0.3
	Block Shatter	1	1.3
Posthole 11, 0-10 cm	Tertiary Flake	3	3.8
Posthole 12, 0-10 cm	Tertiary Flake	1	1.3
Posthole 12, 10-20 cm	Broken Flake	1	0.2
Posthole 12, 20-30 cm	Tertiary Flake	1	0.2
	Broken Flake	2	0.3
Posthole 13, 0-10 cm	Broken Flake	1	0.3
Posthole 13, 10-20 cm	Tertiary Flake	1	0.2
Posthole 14, 10-20 cm	Bipolar Flake	1	0.9
Posthole 15, 0-10 cm	Tertiary Flake	1	2.4
	Broken Flake	1	0.6
Posthole 16, At Surface	Primary Flake	1	23.0
Posthole 16, 0-10 cm	Tertiary Flake	1	0.3
	Broken Flake	2	1.5
Posthole 16, 10-20 cm	Secondary Flake	1	0.1
	Bipolar Flake	1	7.8
Posthole 16, 20-30 cm	Tertiary Flake	1	0.1
	Broken Flake	2	1.1
Posthole 17, 10-20 cm	Tertiary Flake	1	0.2
Posthole 19, 0-10 cm	Broken Flake	1	0.1
Posthole 20, 0-10 cm	Broken Flake	1	0.9
Posthole 20, 10-20 cm	Tertiary Flake	1	0.2
23PU668			
Posthole 1, 0-10 cm	Tertiary Flake	1	0.1
Posthole 1, 10-20 cm	Broken Flake	1	0.1
Posthole 2, 0-10 cm	Primary Flake	1	0.7
Posthole 2, 10-20 cm	Bipolar Flake	1	3.6
23PU669			
Posthole 1, 0-10 cm	Broken Flake	2	0.3
Posthole 1, 10-20 cm	Broken Flake	3	0.4
	Bipolar Flake	1	1.2

Provenience	Artifact Category	Count	Weight (g)
23PU669 continued			
Posthole 3, 0–10 cm	Tertiary Flake	1	0.4
	Broken Flake	2	0.5
Posthole 4, 10–20 cm	Tertiary Flake	1	0.4
Posthole 5, 0–10 cm	Broken Flake	1	0.2
Posthole 7, 0–10 cm	Tertiary Flake	1	1.1
Posthole 7, 20–25 cm	Broken Flake	1	0.5
Posthole 8, 0–10 cm	Primary Flake	1	2.1
Posthole 9, 10–20 cm	Primary Flake	1	0.3
Posthole 10, 10–20 cm	Tertiary Flake	1	0.5
	Broken Flake	4	0.6
Posthole 11, 0–10 cm	Broken Flake	2	0.4
Posthole 12, 10–20 cm	Secondary Flake	1	0.9
	Tertiary Flake	1	0.2
	Broken Flake	1	0.2
23PU670			
Posthole 1, 0–10 cm	Tertiary Flake	2	1.4
	Broken Flake	1	0.2
Posthole 2, 10–20 cm	Broken Flake	1	0.2
Posthole 3, 0–10 cm	Blade	1	1.1
Posthole 4, 10–20 cm	Broken Flake	1	0.2
Posthole 5, 20–30 cm	Broken Flake	1	6.9
23PU671			
Posthole 1, 0–15 cm	Broken Flake	1	0.4
Posthole 2, 10–20 cm	Broken Flake	1	0.1
Posthole 3, 10–20 cm	Broken Flake	1	0.1
Posthole 4, 20–30 cm	Broken Flake	3	0.4
Posthole 5, 10–20 cm	Broken Flake	1	0.4
Posthole 5, 20–30 cm	Broken Flake	1	0.2

Provenience	Artifact Category	Count	Weight (g)
23PU671 continued			
Posthole 6, 0-10 cm	Broken Flake	2	1.3
23PU672			
Posthole 1, 10-20 cm	Broken Flake	1	0.8
Posthole 2, 0-10 cm	Broken Flake	1	0.1
Posthole 3, 0-10 cm	Bipolar Flake	1	1.0
Posthole 4, 0-10 cm	Broken Flake	2	0.2
Posthole 4, 10-20 cm	Tertiary Flake	1	0.1
	Broken Flake	1	0.1
Posthole 5, 0-10 cm	Blade	1	0.4
Posthole 5, 10-20 cm	Broken Flake	1	0.5
Posthole 6, 0-10 cm	Broken Flake	1	0.2
Posthole 7, 0-10 cm	Secondary Flake	1	1.7
	Broken Flake	2	1.7
Posthole 7, 10-20 cm	Broken Flake	1	0.3
Posthole 8, 10-20 cm	Tertiary Flake	2	0.4
23PU675			
Posthole 1, 0-10 cm	Tertiary Flake	1	0.4
	Broken Flake	2	0.1
Posthole 2, 0-10 cm	Broken Flake	1	0.9
AOS 101			
Posthole 1, 20-30 cm	Tertiary Flake	1	0.4
AOS 102			
Posthole 1, 20-30 cm	Ground-stone Metate	1	> 600.0
	Limestone Chunk	1	> 600.0
AOS 108			
Posthole 1, 20-30 cm	Secondary Flake	1(1)	4.9
AOS 110			
Posthole 1, 20-30 cm	Bifacial Thinning Flake	1	0.1
AOS 117			
Posthole 1, 0-15 cm	Tertiary Flake	1	0.2

Provenience	Artifact Category	Count	Weight (g)
AOS 118			
Surface	½-pint Glass Milk Bottle "Daricraft"	1	
Posthole 1, 10–20 cm	Primary Flake	1	6.5
	Secondary Flake	1	2.0
AOS 130			
Surface	Secondary Flake	1	24.5
AOS 146			
Posthole 1, 0–21 cm	Tertiary Flake	1	0.1
Posthole 4, 0–29 cm	Broken Flake	1	0.3
AOS 149			
Surface	Thin Biface Fragment	1	6.5
AOS 150			
Posthole 1, 0–20 cm	Secondary Flake	1	2.5

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